THE

Journal of the American Medical Association.

EDITED FOR THE ASSOCIATION BY N. S. DAVIS.

PUBLISHED WEEKLY.

Vol. X. CHICAGO, JUNE 23, 1888. No. 25.

ADDRESS IN OPHTHALMOLOGY.

THE TENDENCY OF MODERN OPHTHALMOLOGY.

Delivered at the Thirty-ninth Annual Meeting of the American Medical Association, Cincinnati, May 9, 1888.

BY F. C. HOTZ, M.D.,

OF CHICAGO, ILL.

CHAIRMAN OF THE SECTION OF OPHTHALMOLOGY.

There are times in medical science when opinions and doctrines show a remarkable oscillatory motion, swinging like a pendulum forward and backward, sometimes to come back to the point from which they had started out many years ago. This unsteady movement makes it very difficult, if not impossible, to determine whether any real progress has been made within a short period.

One of the most remarkable instances of the unstable nature of medical opinions is furnished us by the history of the cataract operations since 1860. At that time the corneal flap operation reigned supreme. But when von Graefe published, in 1865, his "Modified Linear Extraction," and demonstrated its superiority over the older method by a marked decrease in the percentage of failures, his operation quickly gained favor with the ophthalmic surgeons and entered on a triumphant march over the world, which is only eclipsed by the phenomenal rapidity with which cocaine in our days conquered the medical profession of all nations. In a few years Graefe's operation had superseded the flap operation so completely that the younger generation of oculists know the latter only from books; and in the course of two decades the superiority of Graefe's method, proven in thousands upon thousands of cases, seemed so firmly established that we all were thoroughly convinced it marked a decided and important progress in ophthalmic surgery. And to-day—what do we see to-day? In all ophthalmological journals and societies voices are loudly urging the return to the corneal flap operation. In the Ophthalmological Section of the last International Congress this question excited a very animated discussion; and almost at the same time the same question was brought up before the German oculists in Heidelberg by Prof. Schweigger, of Berlin (Graefe's successor!), who expressed himself unreservedly in favor of the corneal flap operation. We cannot close our eyes to the fact that this reaction has already assumed a formidable size; and well may we ask, "Is the pendulum bound to swing back to where it stood thirty years ago?"

If newness and progress were identical in medical matters we could easily measure the advancement made in each successive year; and it would be an easy task for your chairman to carry out the dictates of the By-laws of our Association, which charge him "to prepare an address on the recent advancements in the branches belonging to his Section." But real progress in medical science is of an exceedingly slow growth; slowly old views are modified and new theories evolved; and when they have taken form and flesh they have to stand the crucial tests of long-continued clinical observations before they can be accepted as an improvement or advance.

This slow process of cleaning the chaff from the wheat renders it manifestly impracticable to measure the advancement in medicine by the year; and I therefore ask for your kind indulgence if, instead of undertaking the impossible task of determining the progress made in ophthalmology, otology and laryngology during the past year, I have chosen for the subject of this address some considerations regarding

THE TENDENCY OF MODERN OPHTHALMOLOGY IN ITS RELATIONS TO GENERAL MEDICINE.

When Graefe began his reformatory work, ophthalmology, like the rest of medical science, was still largely permeated by the doctrine of "dyscrasies." The most affections of the eye were regarded and treated as manifestations of a general dyscrasia or impure state of the blood. Constitutional treatment received the principal attention; local remedies were considered of little consequence. Physicians had a holy horror of opening by daylight the eyes of children afflicted with the so-called "scrofulous ophthalmia;" they thought it not only inexpedient but unnecessary to examine such eyes every day.

Graefe, in his travels, had been thoroughly convinced of the shortcomings of this therapy, and it was clear to his mind that the only trustworthy foundation for a rational and successful therapy was a thorough knowledge of the pathological changes which take place in the tissues of the eye in disease. From the beginning of his practice to his last day he emphasized the paramount importance of daily examination and accuracy in observation. Upon this basis he built up his methods of local treatment and demonstrated by his brilliant success their superiority over the irrational therapy of the past.

But the great stress which in Graefe's clinic was laid upon local treatment very soon created in medical circles the impression that Graefe and his pupils were inclined to rely upon local medication exclu-

sively, and to pay no attention to constitutional or other diseases which possibly might influence the ocular affection. And it came to be generally believed that modern ophthalmology was so exclusive a specialty that it had no interest in or connection with general medicine.

Nothing could be more erroneous than this idea. Every leaf of the ophthalmological literature bears witness that modern ophthalmology is striving incessantly to establish the closest connection with general medicine by investigating the relations which exist between the ocular diseases and the maladies of the whole human body.

In solving this great problem ophthalmology is endeavoring to answer these two questions:

1. What effect have constitutional and organic diseases upon the eye?

2. What influence have morbid disturbances in the eye upon other parts of the body?

Many are the valuable contributions made by ophthalmologists to our knowledge of the etiological dependence of ocular affections from organic or systemic diseases, especially since the ophthalmoscope has greatly widened the field of these investigations. In 1856 already Dr. M. Heyman, of Dresden, recognized and described the characteristic pathological changes in the retina associated with Bright's disease of the kidneys. Diabetes was found not only to disturb the lens, but also to cause iritis and choroiditis; and leukæmia is now known to induce peculiar lesions in the retina. Numerous observations have been recorded of the influence of cerebral and spinal affections on the visual organs, and of the effect of tobacco, alcohol, quinine, lead and other poisons. Uterine disorders have been found a prolific source of ocular neuroses, and diphtheria a cause of paralytic affections; not to speak of innumerable new facts discovered in regard to the etiological connection of gout, rheumatism, syphilis and malaria with ocular diseases.

It would be impossible in this short address to give a full list of all the work which has recently been done in this direction. But even these few instances are sufficient to show that modern ophthalmology, far from ignoring the vital connection of the eye with the rest of the body, has been studiously at work to gain a better understanding of this relation on the basis of accurate clinical observations.

Nor has it escaped the notice of observant oculists that ocular diseases sometimes exert a grave influence upon the whole organism or its several parts. The febrile excitation in panophthalmitis; the violent headache in cyclitis; the terrible paroxysms of neuralgia, nausea and vomiting in acute glaucoma; the giddiness in slight paresis of ocular muscles—these and similar facts prove the diseased eyeball can exert a disturbing influence which may reach far beyond its immediate vicinity.

And here is the point where ophthalmology comes into the closest contact with general medicine, since it has directed the latter's attention to the eye as the possible cause of many nervous disorders. It has long been known to oculists that among the complaints of asthenopic patients periodic headache, dizziness, nausea or a sensation of weariness are very common, and that all these symptoms are relieved by the glasses which correct the visual difficulty. The fact thus proven, that eye-strain is capable of seriously affecting the nervous system, logically leads to the inquiry whether the same cause may not be operative in many cases of neurotic affections where the patients do not show any *manifest* visual disturbance. Clinical observations on a large scale alone can decide this question. And preëminent among those oculists who have undertaken this task, stands Dr. Geo. T. Stevens, of New York, who during a series of years has carefully examined the visual functions of a great number of patients suffering from the various forms of nervous disorders, and also carefully studied the effect the correction of visual difficulties—where any were found—had upon the exciting nervous disturbance. The recently published records of his researches[1] are highly interesting reading not only for the oculist and neurologist, but for every physician; and it is a task worthy the combined efforts of physicians and oculists to ascertain whether Dr. Stevens is right or wrong in declaring "difficulties attending the functions of accommodating and of adjusting the eyes in the act of vision, or irritations arising from the nerves involved in these processes, are among the most prolific sources of nervous disturbances, and more frequently than other conditions constitute a neuropathic tendency." If these views be confirmed by further clinical observations, ophthalmology would most assuredly have rendered invaluable services to general medicine by disclosing a way of relieving many common and heretofore often intractable nervous affections.

Gentlemen: From a multitude of evidences contained in the records of modern ophthalmology I have selected but a few which truthfully reflect the spirit of this specialty. I wished to show that its attention and interest are not confined to the narrow anatomical limits of the visual organ; that its tendency is to widen the field of its usefulness and to contribute its share to the advancement of medical science by solving the highly interesting problems of the mutual influence of the body upon the eye and *vice versa*. Much has already been done, but much more, undoubtedly, could have been accomplished, had ophthalmology in these efforts been generously assisted by the medical profession. But it cannot be denied that general medicine has, for a long time, shown a strange indifference to ophthalmology. Do you ask for evidence? Look in your medical textbooks and see how little notice is taken of the most important discoveries in regard to the influence of general diseases upon the eye. Look at your medical colleges. Not one of them regards the study of ophthalmology as important enough for medical students to make the attendance of eye clinics obligatory. Ask your clinical teachers, and they will tell you the interest medical students and physicians take in ophthalmology is exceedingly low if gauged by the number of attendants at the eye clinics.

Thus ignored by general medicine and divorced by

[1] Functional Nervous Disorders; their Causes and Treatment. By Geo. T. Stevens, M.D. New York, 1887.

its rapid growth from surgery, ophthalmology has been forced into an isolated position never sought by it; for, in the great task it has set before itself to solve, ophthalmology appreciates too well the importance of the closest intercommunication and the active coöperation with all the other sections of medical science.

The great diversity of the scientific work to be done by each branch necessitates the division of this Association into Sections. But, while each Section should have its own organization and the privilege to carry out its work in its own way, we do not propose to sever our connection with the Association by establishing a special society; but, realizing the great mutual benefit coming from personal contact of the workers of the different Sections, we shall always bear in mind that one common interest binds all Sections together; they belong together, they can profit from each other, and they shall meet and work together for the advancement of the science and art of medicine.

ORIGINAL ARTICLES.

RECTAL INSUFFLATION OF HYDROGEN GAS AN INFALLIBLE TEST IN THE DIAGNOSIS OF VISCERAL INJURY OF THE GASTRO-INTESTINAL CANAL IN PENETRATING WOUNDS OF THE ABDOMEN.

Read in the Section on Surgery, at the Thirty-ninth Annual Meeting of the American Medical Association, May, 9, 1888, and illustrated by three experiments on dogs.

BY N. SENN, M.D., PH.D.,

ATTENDING SURGEON TO THE MILWAUKEE HOSPITAL, PROFESSOR OF PRINCIPLES OF SURGERY AND SURGICAL PATHOLOGY IN THE RUSH MEDICAL COLLEGE, CHICAGO, ILL.

The operative treatment of penetrating wounds of the abdomen complicated by visceral injury of the gastro-intestinal canal is now sanctioned by the best surgical authorities, and may be considered as a well established procedure, based as it is upon the results of experimentation and clinical experience. A visceral wound of the stomach or any portion of the intestinal canal sufficient in size to give rise to extravasation into the peritoneal cavity must be looked upon as a mortal injury unless promptly treated by abdominal section. A number of well authenticated cases are on record where a wound in the stomach or the large intestine healed and the patients recovered without the intervention of surgery, but these instances are so few that, practically, the force of the preceding statement remains unimpaired. After a careful study of an immense clinical material Otis came to the important conclusion that gunshot injuries of the small intestines under the old expectant treatment without exception resulted in death, and this is a sufficiently cogent argument in favor of their treatment by laparotomy as affording the only chance of recovery.

The great difficulty that presents itself to the surgeon in the absence of positive symptoms is the differential diagnosis between a simple penetrating wound and a penetrating wound complicated by injury of the gastro-intestinal canal. While the existence of serious intra-abdominal hæmorrhage can usually be readily recognized by well-marked physical signs and a complexus of symptoms which points to sudden diminution of intra-arterial pressure, and thus furnishes one of the positive indications for treatment by laparotomy, the well-known fact remains that a visceral injury of the stomach or intestines seldom gives rise to symptoms upon which the surgeon could rely in making a positive diagnosis.

In the treatment of penetrating wounds of the abdomen laparotomy is resorted to either for the purpose of (1) arresting dangerous hæmorrhage, or (2) the detection and treatment of a wound or wounds of its hollow viscera. The first indication is readily recognized, and the diagnosis not only justifies the operation, but imposes it as a stern duty upon the surgeon from which he should never shrink. The recognition of the second indication offers greater difficulties, and the uncertainty of diagnosis which surrounds such cases is used as a sufficient argument by many in opposing the adoption of timely and efficient surgical treatment, and is responsible for the loss of many lives which otherwise might have been saved. The uncertainty of diagnosis must remain in the way of a more general adoption of laparotomy in the treatment of penetrating wounds of the abdomen in the case of timid surgeons, and the same cause may lead to most unpleasant medico-legal complications in the practice of bolder and more aggressive operators. Clinical experience and statistics have demonstrated the importance of making a distinction between punctured and gunshot wounds in the abdomen, both in reference to diagnosis and treatment. It is well known that penetrating stab wounds are less likely to be complicated by visceral injury than bullet wounds, consequently this class of injuries offers a more favorable prognosis and does not call so uniformly for treatment by abdominal section. That penetrating gunshot wounds of the abdomen do not always implicate the gastro-intestinal canal has been well demonstrated by experiment and clinical observation. During the last two years three cases of bullet wounds of the abdomen came under my observation where no doubt could be entertained that penetration had taken place, and yet all the patients recovered without operation. In all three cases the bullet had taken an antero-posterior direction. As in private practice the treatment of penetrating wounds of the abdomen usually involves great medico-legal responsibilities, it becomes of the greatest importance to arrive at positive conclusions in reference to the character of the injury before the patient is subjected to the additional risks to life incident to an abdominal section.

We will suppose a case. In a quarrel a man is shot in the abdomen. The assailant is placed under arrest. The surgeon who is called establishes the fact that the bullet has entered the abdominal cavity, and from the point of entrance and its probable diretion he has reason to believe that it has wounded some part of the gastro-intestinal canal, and he concludes to verify his diagnosis by an exploratory lapar-

otomy; the operation is performed, and the most careful examination made, but no visceral wound is found. The wound is closed and the patient dies on the third or fourth day of septic peritonitis. The attorney for the State charges defendant with murder.

The defense will very naturally raise the questions: "Did the man die of the injury or the operation?" "Shall the defendant be tried for assault and battery or for murder?" During the trial the attending surgeon is made a target for a volley of a medley of scientific and unscientific questions by the cunning attorney for the defense in his attempt to save his client from the gallows or State prison for life, at the expense of the reputation of the surgeon and the respect and good name of the art and science of surgery. This picture is not overdrawn. Such cases have happened and will happen again. It is apparent that if some infallible diagnostic test could be applied in cases of penetrating wounds of the abdomen which would indicate to the surgeon the presence or absence of visceral lesions of the gastro-intestinal canal the indication for aggressive treatment would become clear and the medico-legal responsibility of the operator would be reduced to a minimum. As we can never expect by a study of symptoms or by the ordinary physical examination to fill this gap, I was induced to search for some reliable test which in such cases should prove that the penetrating bullet or instrument had injured the gastro-intestinal canal. It occurred to me that a wound in the stomach or intestine should be sought for in some such way as the plumber locates a leak in a gas-pipe. The first object to be accomplished was to prove the permeability of the entire gastro-intestinal canal to inflation of air, and the next step was to find some innocuous gas which when inflated would escape from the intestinal wound into the peritoneal cavity, and from there through the external wound, where its presence could be proved by some infallible test.

I. PERMEABILITY OF THE ILEO-CÆCAL VALVE TO RECTAL INSUFFLATION OF AIR OR GAS.

A great deal has been said and written in reference to the permeability of the ileo-cæcal valve to injections of fluids into the rectum or to the insufflation of air or gases. The majority of those who have studied this subject clinically or by experiment make the positive assertion that the ileo-cæcal valve is perfectly competent and effectually guards the ileum against the entrance of both fluids and gases forced into the rectum, while others insist that it is permeable only in exceptional cases, and only a few claim that its resistance can be overcome by a moderate degree of pressure. Heschl (*Zur Mechanik der diastaltischen Darmperforationen Wiener Med. Wochenschrift*, No. 1, 1881) made a number of experiments and satisfied himself that the ileo-cæcal valve serves as a safe and perfect barrier against the entrance of fluids from below. In testing the resisting power of the coats of the intestine he found that the serous coat of the colon gave way first to overdistension, while the remaining tunics yielded subsequently to a somewhat slighter pressure. The small intestine of a child on being subjected to overdistension ruptured first on the mesenteric side, the place where acquired diverticular are found. Bull (*Virchow's Jahresbericht*, 1878, B. II. S. 205) has found that in the adult one litre of water injected by the rectum will reach the cæcum, but that the entire capacity of the large intestine is from 4 to 5 litres. He is of the opinion that in the living body fluid cannot be forced beyond the ileo-cæcal valve, although ancient and modern experimenters claim to have succeeded in the cadaver. He affirms that when the rectum is distended by air the ileo-cæcal valve is rendered incompetent and the air passes into the small intestines.

Cantani (*Virchow's Jahresbericht*, 1879, B II S, 180) is a firm believer in the permeability of the ileo-cæcal valve to fluid rectal injections. In one instance he treated a case of coprostasis by an injection of a litre and a half of oil per rectum, and an hour later a part of the oil was ejected by vomiting. He advises that the intestinal tract above the ileo-cæcal valve should be utilized as an absorbing surface in cases requiring rectal alimentation, and when in a diseased condition should be treated by topical applications.

Behrens (*Ueber den Werth der Künstlichen Auftreibung des Dickdarmes mit Gasen u. Fluessigkeiten. Goettingen. Dissertation. 1886*) concluded from his experiments that it required the insufflation per rectum of one and one-eighth litres of air to reach the ileum through the ileo-cæcal valve. In his experiments he had no difficulty in overcoming the competency of the ileo-cæcal valve by rectal insufflation of air.

Debierre (*La valvule de Bauhin considerée comme barrière des apothicaires. Lyon Médicale*, No. 45, 1885) made numerous experiments on the cadaver to test the permeability of the ileo-cæcal valve to rectal injections of fluids or inflation of air. The results which he obtained were not constant. In some subjects the valve proved only permeable to air; in others, to both air and water, while in some no air or fluids could be forced into the ileum by any degree of force. When the intestine was left *in situ* the valve was found less permeable than when the intestine had been removed from the body. He attributes the different degrees of competency of the valve to variations in the anatomical construction of the valve. If both lips of the valve are equal in length, or if the lower lip is longer the valve was found impermeable. It proved permeable in cases where the lower lip was shorter, contracted and smaller than the upper. In the last instance the advancing volume of fluid or air lifted the upper valve, while in the former structure of the valve the margins of the lips of valve were pressed against each other, perfectly shutting off all communication between the colon and the ileum.

Mr. Lucas ("On Inversion with Inflation in the Cure of Intussusception." *The Lancet*, January 16, 1886) enumerates the following objections against forcible rectal injections of water as a means to reduce an invagination:

1. Owing to its weight it exerts much too strong lateral pressure for the intestine safely to bear, and

he has found it easy to rupture the bowel after death by forcing in water.

2. Should reduction have been accomplished the contact of a large quantity of water with the large bowel is apt to increase the tendency to diarrhœa. He claims, very properly, that air, on the other hand, is a natural occupant of the intestinal canal, and whilst its pressure is of the gentlest its presence excites no unnatural peristaltic action. He administers an anæsthetic to the point of relaxation before the inflation is attempted.

Dawson (*Lancet and Clinic*, Feb. 21, 1885) made a number of experiments on the cadaver and came to the conclusion that when the ileo-eæcal valve is in a normal condition it effectually guards the small intestine against the ingress of fluids from below.

Illoway (*American Journal Medical Sciences*, Vol. 41, p. 168) devised a force-pump which he strongly recommends for the purpose of forcing water beyond the ileo-cæcal valve in case the seat of an intestinal obstruction is located above that point. He reports four cases of intestinal obstruction treated by this method, three of which recovered.

Battey (*Transactions of the American Medical Association*, 1878) asserts the permeability of the entire alimentary canal by enema, and verifies his statement by the recital of his own clinical experience and experiments upon the cadaver. Ziemssen recommends inflation of the rectum for diagnostic and therapeutic purposes and proceeds as follows: a rectal tube about 6 inches long is carried into the anus and fixed by pressing together the nates, the patient lying on the back. A funnel is then connected with the rectal tube by means of rubber tubing. For complete inflation of the large intestine 3 drams of bicarbonate of soda and 4½ drams of tartaric acid are separately dissolved in water and portions of either solutions alternately added. To prevent sudden overdistension of the bowel it is advised to add the solutions at intervals of several minutes. A very important use of this method is to diagnosticate the position of contractions, strictures, or occlusion of the intestine in cases in which it is desirable to operate, and also as showing the position of peritoneal adhesions. The result of his observations has led him to believe that, as a rule, the small intestine is completely closed to the entrance of substances from the colon by the ileo-cæcal valve. Under the influence of deep chloroform narcosis, however, this resistance is lessened, and fluids can be thrown into the small intestine.

In my paper read at the last International Medical Congress ("An Experimental Contribution to Intestinal Surgery with Special Reference to the Treatment of Intestinal Obstruction") the following experiments appear which illustrate the difficulty in overcoming the resistance of the ileo-cæcal valve by rectal injections of water:

Experiment 23.—While completely under the influence of ether an incision was made through the linea alba of a cat, sufficiently long to render the ileo-cæcal region readily accessible to light. An incision was made into the ileum just above the valve and by gently retracting the margins of the wound the valve could be distinctly seen. Water was then injected into the rectum and as the cæcum became well distended it could be readily seen that the valve became tense and appeared like a circular curtain preventing effectually the escape even of a drop of fluid into the ileum. The competency of the valve was only overcome by overdistension of the cæcum which mechanically separated its margins, which allowed a fine stream of water to escape into the ileum. The insufficiency of the valve was clearly caused by great distension of the cæcum. That such a degree of distension is attained by no inconsiderable danger was proved by this experiment, as the cat was immediately killed, and on examination of the colon and rectum a number of longitudinal rents of the peritoneal coat was found.

Experiment 24.—In this experiment, a cat was fully narcotised with ether, and while the body was inverted, water was injected per rectum in sufficient quantity, and adequate force by means of an elastic syringe to ascertain the force required to overcome the resistance offered by the ileo-cæcal valve. Great distension of the cæcum could be clearly mapped out by percussion and palpation before any fluid passed into the ileum. As soon as the obstruction at the valve was overcome, the water rushed through the small intestines, and having traversed the entire alimentary canal issued from the mouth. About a quart of water was forced through in this manner. The animal was killed and the gastro-intestinal canal carefully examined for injuries. Two longitudinal lacerations of the peritoneal surface of the rectum, over an inch in length, were found on opposite sides of the bowel.

Experiment 25.—This experiment was conducted in the same manner as the foregoing, only that the cat was not etherized. More than a quart of water was forced through the entire alimentary canal from anus to mouth. The animal was not killed, and lived for eight days, but suffered during the whole time with symptoms of ileo-colitis. A post-mortem examination was not made in this case, although the symptoms manifested during life leave no doubt that they resulted from injuries inflicted by the injection."

It will thus be seen that in the three cases where fluid was forced beyond the ileo-cæcal valve, in two of them the post-mortem revealed multiple lacerations of the peritoneal coat of the large intestines, while the third animal sickened immediately after the experiment was made, and died, from the effects of the injuries inflicted, eight days later. These experiments combined with clinical experience leave no further doubt that, practically, the ileo-cæcal valve is not permeable to fluids from below, and that for diagnostic and therapeutic uses it is unsafe and unjustifiable to attempt to force fluids beyond the ileo-cæcal valve. We should *a priori* expect that air and gases on account of their less weight and greater elasticity than water, could be forced along the intestinal canal with less force, and for that reason alone, if for no other, should be preferred to water in cases where it appears desirable to distend the intestine above the ileo-cæcal valve. The results obtained by experimental research in the past speak in favor of rectal inflation by air or gas in all cases

where for diagnostic or therapeutic purposes it becomes necessary to dilate the entire or a portion of the gastro-intestinal canal.

1. Rectal Insufflation of Air.

Experiment 1.[1]—Dog, weight 75 pounds. The animal was profoundly anæsthetized, and by means of an ordinary elastic syringe air was forced through the rectum until the whole abdomen became distended and tympanitic. The abdominal cavity was opened in the median line, and the whole intestinal canal was found distended. An incision about an inch in length was made about the middle of the small intestines when air escaped, and about one foot of the intestine on either side of the wound collapsed. The remaining portion of the intestines remained unaffected by the incision. The animal was killed, and every part of the entire gastro-intestinal canal was carefully examined for injuries. The ileo-cæcal valve remained intact, and no evidences of rupture of any of the coats of the intestines could be detected.

Experiment 2.—Dog, weight 12 pounds. Under full anæsthesia the gastro-intestinal canal was inflated in the same manner as in the preceding experiment, and the inflation was carried to the same extent. On opening the abdomen in the median line the distended loops of the intestines protruded from the wound and partial eventration was allowed to take place for the purpose of examining the intestines for injuries. The closest inspection failed to detect evidences of partial or complete rupture of any of the tunics. One of the distended coils of the intestine was incised at opposite points on lateral aspect, the incisions being an inch in length. Only a limited segment of the bowel on each side of the wounds collapsed, and although the peristalsis was active more remote portions were emptied very slowly. The wounds were united transversely for the purpose of making an artificial diverticulum. The animal recovered without any untoward symptoms.

Experiment 3.—Dog, weight 13 pounds. Animal profoundly etherized, and air inflated as in former experiments. The distended colon could be clearly mapped out by percussion before a gurgling sound in the region of the ileo-cæcal valve indicated that the air had entered the ileum. After this had occurred the middle of the abdomen became prominent and tympanitic. As soon as the resistance offered by the ileo-cæcal valve had been overcome it required less force in distending the remaining portion of the gastro-intestinal canal. The inflation was carried to the extent of distending the stomach, an event which was easily recognized by a considerable prominence in the epigastric region which was tympanitic on percussion. At this time an elastic tube was inserted into the stomach, and its free end immersed under water. Bubbles of air escaped freely, and the abdominal distension was materially diminished. As the inflation was continued the air would escape through the stomach-tube, showing that a moving current of air existed between the rectal tube and the stomach tube. The abdominal distension which remained after the experiment had completely disappeared after eighteen hours, and the animal never manifested pain or any other symptoms of disease.

Experiment 4.—Dog, weight 15 pounds. In this experiment inflation was practiced without anæsthesia. The rigidity of the abdominal muscles greatly interfered with the distension of the colon to a requisite degree for overcoming the competency of the ileo-cæcal valve. The passage of air from the cæcum into the ileum through the ileo-cæcal valve was announced by an audible gurgling sound which was repeated at intervals, as the cæcum, after partial collapse, again was distended by renewing the inflation. The insufflation was continued until the stomach became distended by air, which caused vomiting and copious eructations of air. The dog remained in perfect health after the inflation.

These experiments prove the feasibility of forcing air through the entire alimentary canal from below upwards. In not a single experiment could any structural changes be found in the walls of the intestine, and all animals not killed immediately after the experiment recovered. The results of these experiments contrast strongly with those where the same objects were in view by rectal injections with water. In the latter experiments the force requisite to overcome the ileo-cæcal valve invariably produced lacerations of the peritoneal coat of the bowel, which in themselves would constitute a grave source of danger. It now became necessary for me to prove that the ileo-cæcal region in man in so far resembled that in the dog that the ileo-cæcal valve could be rendered more readily incompetent by inflation of air than by injections of fluids. The following two experiments were made for this purpose:

Experiment 5.—A young man, 25 years of age, a patient in the Milwaukee Hospital under treatment for a tumor in the epigastric region, was subjected to the experiment. He was placed flat on the back. On percussion the whole umbilical region was found flat and the abdominal wall retracted. No anæsthesia. With an ordinary elastic syringe air was injected slowly into the rectum. As inflation progressed the outlines of the entire colon could be clearly seen and accurately mapped out by percussion. The cæcal region especially became very prominent. The inflation was continued very slowly, and as soon as the air passed through the ileo-cæcal valve the hypogastric and umbilical regions began to rise and resonance replaced the former dulness on percussion. The arrival of air in the stomach was indicated by distension of the epigastric region, disappearance of the contour of the tumor and resonance on percussion. During the whole process of inflation the patient only complained of a slight pain in the splenic flexure of the colon, and a sensation of fullness in the abdomen. As soon as it became apparent that the stomach was distended by air a stomach-tube was introduced and its free end was placed under water. As the inflation was continued bubbles of air continued to escape. On assuming the erect position

[1]These experiments were made at the County Hospital, and my thanks are due to Dr. M. E. Connel, Superintendent of the hospital and his assistants, and Dr. Wm. Mackie of Milwaukee, for valuable assistance.

the patient complained of colicky pains in the umbilical region which undoubtedly were caused by an exaggerated peristalsis. The pain, however, soon disappeared, and on the following day he was as well as usual.

Experiment 6.—Adult male, suffering from neurasthenia. Experiment and result the same as in No. 5, only that in this case the pain due to distension of the colon was referred to the ileo-cæcal region, and the colicky pain in the umbilical region persisted for a longer time. The air was again forced from anus to mouth without causing any injury whatever and only moderate degree of pain for a short time.

The foregoing experiments demonstrate conclusively that in the human subject by a moderate degree of force, short of producing any injury of the tunics of the intestines, air can be forced along the entire alimentary tract, and that this procedure can be resorted to with perfect safety for diagnostic and therapeutic purposes in all cases where the tissues of the intestinal wall have not suffered too much loss of resistance from antecedent pathological changes.

2.—*Inflation of Alimentary Canal through Stomach Tube.*

We should naturally expect that the alimentary canal could be inflated with more ease and with a less degree of force by following the normal peristaltic wave. That this is not the case will be seen from the following experiment:

Experiment 7.—Dog, weight 40 lbs. (18 kilograms). After complete anæsthesia was effected a flexible rubber tube was introduced into the stomach and the free end of the tube connected with a four-gallon rubber balloon, containing hydrogen gas, by means of a rubber tube. Between the gas reservoir and the stomach-tube a manometer was interposed, registering accurately the force used in making the inflation. The inflation was made by compressing the rubber bag. A tube was introduced into the rectum to facilitate the escape of gas that might reach this portion of the intestinal tract. Under a pressure of one pound and a half the stomach dilated rapidly, and later the entire abdomen became distended and resonant on percussion, but no gas escaped per rectum. When the pressure was increased to two pounds (1 kilogram) no further distension of the abdomen took place, as the gas escaped along the side of the stomach tube. At this time respiration became greatly embarrassed, but was relieved on allowing gas to escape through the stomach-tube. On compressing the abdomen firmly the distension disappeared almost completely, at the same time a large quantity of gas continued to escape through the stomach tube. Inflation was renewed, and under a pressure of one pound and a half, the abdomen again became uniformly distended. When the pressure was increased to two pounds (1 kilogram) the dog suddenly died, and all efforts at resuscitation failed. On opening the abdomen the stomach was found enormously distended, reaching three inches below the umbilicus, occupying almost the entire abdominal cavity. The upper half of the small intestines was distended; numerous points of sharp flexions were found among the different distended coils. The distended stomach had evidently encroached so much upon the abdominal space as to render the greater part of the intestinal canal impermeable by pressure.

Experiment 8.—Dog, weight 15 lbs. After the animal was placed fully under the influence of ether the abdomen was opened and the cæcum and lower portion of ileum drawn forward into the wound, and a large needle of an aspirator inserted into the ileum just above the ileo-cæcal valve. Through a rubber tube hydrogen gas was forced into the stomach. Under one pound (5 hectograms) of pressure the stomach and upper portion of the intestines dilated readily. When the force was increased the gas returned through the œsophagus along the sides of the stomach-tube.

Experiment 9.—Dog, medium size. This animal was killed to ascertain the results of an experiment made for another purpose. Rubber balloon containing hydrogen gas and manometer were used for making the inflation. The tube through which the inflation was made was tied in the œsophagus. The abdomen was distended enormously, and on increasing the pressure to three and three-fourths pounds (1¾ kilograms), still no gas escaped through the rectal tube. The abdomen was then opened, when the stomach was found so enormously distended that it filled almost the entire abdominal cavity. About one-fourth of the length of the small intestines was found distended, and among the distended loops numerous acute flexions could be seen. After the abdomen was opened, under long and continuous distension, the peritoneal covering of the stomach gave way, when the manometer registered only one pound and a half of pressure.

Experiment 10.—Dog, weight 18 lbs. (8 kilograms). Immediately after death the œsophagus was isolated and the tube of the hydrogen gas inflator securely tied in, and a glass tube was inserted into the rectum. Under a pressure of two and three-fourths pounds (1.2 kilograms) registered by the manometer the gas first dilated the stomach and then passed along the intestines until it escaped in a steady stream through the rectal tube, where it was ignited. On opening the abdomen the stomach was found greatly distended, while the distension of the intestines was a great deal less marked. None of the tunics of the stomach or intestines were injured.

Experiment 11.—Dog, weight 20 lbs. (9 kilograms). Animal etherized and a flexible tube connected with the gas inflator introduced into the stomach and a glass tube into the rectum. On inflation the stomach became gradually distended, and when the pressure had reached one pound and a half (.6 kilogram) the dog vomited and a good deal of gas escaped at the same time. Inflation was again commenced and was followed by uniform distension and tympanitis over the entire abdomen, when the pressure reached two pounds and a half (1 kilogram) the gas escaped from the rectum, and when ignited burned with a steady blue flame. The experiment was followed by no unfavorable symptoms.

Experiment 12.—Dog, weight 12 lbs. (5½ kilograms). Under the influence of ether inflation with hydrogen gas in the same manner as in last experiment. As soon as the stomach became well distended, and the manometer registered one pound and a half of pressure, vomiting occurred, attended by a free escape of gas, which was followed by collapse of the distended epigastric region. When inflation was again resumed, it was noted that any increase of pressure over one pound (.45 kilogram) was followed by regurgitation of gas, and on this account it was found impossible to inflate the lower portion of the intestinal tract. No unfavorable symptoms followed the experiment.

Experiment 13.—Dog, weight 28 lbs. (12½ kilograms. Under the influence of ether inflation of hydrogen gas through stomach tube. As soon as the pressure was increased to more than 1 lb. (.45 kilogram) the gas escaped along the sides of the tube through the œsophagus, consequently only the upper portion of the abdomen could be distended, and the inflation evidently did not extend much beyond the stomach. The experiment was repeated several times with the same result. The animal remained perfectly well after the experiment.

Experiment 14.—Dog, weight 12 lbs. (5 kilograms). Inflation of stomach by hydrogen gas under full anæsthesia. The effect of the inflation was the same as in the last experiment, only the stomach and upper portion of the small intestines could be distended and further inflation was impossible, as the gas escaped from the stomach as soon as the pressure exceeded 1 lb. (.45 kilogram). A large needle of an aspirator was pushed through the linea alba into the stomach, and the gas which escaped through it on being lighted burned with the characteristic blue flame. After the needle was withdrawn the inflation was continued to ascertain if the puncture in the stomach would allow the escape of gas into the peritoneal cavity. The inflation was continued until the entire abdomen was distended by the gas. That the distension and tympanites was due to the presence of gas in the peritoneal cavity became evident, as it remained after the stomach had been emptied of its gas, and on percussion it was ascertained that the entire liver dulness had disappeared. The dog recovered without symptoms of peritonitis or any other ill-effects from the experiment.

These experiments demonstrate conclusively that it is more difficult to inflate the alimentary canal from above downwards than from below upwards, as in the living animal I succeeded only in one instance in forcing hydrogen gas from mouth to anus, while in others a degree of force sufficient to rupture the peritoneal coat of the stomach only effected distension of the stomach and upper portion of intestinal canal. It is evident that great distension of the stomach constitutes an important factor in causing or aggravating intestinal obstruction, as it effects compression which causes impermeability of the intestines, or aggravates conditions arising from an antecedent partial permeability by producing sharp flexions among the distended coils of the intestines. For diagnostic and surgical purposes the stomach can be readily inflated almost to any extent through a stomach tube, and when it becomes necessary to ascertain the presence of a visceral wound or perforation of this organ, this method of inflation may be resorted to with advantage.

3. Experiments to Determine the Degree of Force which is Necessary to Overcome the Resistance offered by the Ileo-cæcal Valve.

Accurate experiments to determine the force required to render the ileo-cæcal valve incompetent by insufflation of air or gas have so far not been made, and as it is exceedingly important to obtain some accurate information on this subject, the following experiments were made. In all experiments air or hydrogen gas was used. The inflation was made with a rubber balloon. The pressure was estimated either with a mercury gauge, or with a manometer used by gas fitters and plumbers. The manometer or mercury gauge was connected by means of rubber tubing with the rectal tube on one side and the rubber balloon on the other. The rubber balloon in which the hydrogen gas was collected held 4 gallons, and numerous experiments showed that when the gas was forced through the opening of a stopcock, the lumen of which was about the size of a knitting needle, a compression equal to 200 lbs. (90 kilograms) would never register more than 3 lbs, (1.3 kilograms) of pressure.

In the living subject the escape of air or gas from the rectum was prevented by an assistant pressing the margins of the anus firmly against the rectal tube.

Experiment 15.—Dog, weight 35 lbs. (16 kilograms. Immediately after death the lower portion of the rectum was isolated and the rectal tube inserted and fixed in its place by tying a string firmly around the rectum. The abdomen was opened and the intestines left *in situ*. The ileum was cut transversely 6 inches above the ileo-cæcal valve and a glass tube inserted into the distal end, which was also tied in. Hydrogen gas was inflated from a rubber balloon. Under a pressure of ¾-lb. (.3 kilogram) the cæcum was dilated, and a moment later the gas escaped from the glass tube and was ignited; the flame remained steady under a pressure of from ½- to ¾-lb. (.2 to .3 kilogram).

Experiment 16.—Dog, weight 20 lbs. (9 kilograms). Same as in the preceding experiment, only that the resistance of the ileo-cæcal valve was overcome under a pressure of ½-lb. (.2 kilogram). The distension of colon and cæcum was moderate, and signs of injury to its tunics could not be found in either experiment.

Experiment 17.—Dog, weight 23 lbs. (10 kilograms). In this experiment the abdomen was opened immediately after death, and a large hypodermic needle inserted into the ileum a short distance above the ileo-cæcal valve before the inflation of hydrogen gas was made. A pressure of ¾ lb. (.3 kilogram) was sufficient to force the gas through the ileo cæcal valve and through the needle; the valve remained open under a steady pressure of ½ lb. (.2 kilogram). Having determined that air and gas can be forced beyond the ileo-cæcal valve in dogs under very low

pressure, varying from ½- to ¾-lb., I proceeded to test the degree of resistance of the ileo-cæcal valve in the human subject.

Experiment 18.—Strong, healthy young man. The subject was placed flat upon his back and hydrogen gas was inflated from a rubber balloon. At first the gas was forced in very slowly under a pressure of 1½ lb. (.6 kilogram), which distended the colon visibly as far as the cæcum. As the distension appeared to remain the same the pressure was increased to 2 lbs. (.9 kilogram), when suddenly the indicator of the manometer receded to 1 lb. (.4 kilogram), and the umbilical region became prominent and resonant, showing conclusively that the ileo-cæcal valve had been passed and the small intestines were filling rapidly with gas. As soon as the whole abdomen had become distended and tympanitic the manometer again registered 1½ lb. (.6 kilogram) of pressure, and remained at this figure for some time after further inflation was discontinued by turning the stopcock.

Experiment 19.—Young man, in good health. Experiment conducted in the same manner as in the foregoing. After the colon and cæcum had been well dilated the manometer registered 2¼ lbs. (.4 kilogram), and the umbilical region became prominent and resonant. As the inflation advanced the average pressure was 1¾ lb. (.8 kilogram), and twice it was increased to 2½ lbs. (1.4 kilogram), when the patient complained of pain in the umbilical region. As soon as the stopcock was turned the pressure sank to ¾-lb. (.3 kilogram). These two experiments prove that in a normal condition the ileo-cæcal valve in a healthy adult person is overcome by rectal inflation under a pressure of 1½ to 2¼ lbs. (.6 to 1.2 kilogram). This amount of pressure is not sufficient to injure the tunics of a healthy intestine, and in both instances the subjects of the experiments complained but little of the immediate or remote effects of the experiment. As the result of numerous observations, I can state that when the inflation is made slowly and continuously there is less danger of injuring the intestines than when the inflation is made rapidly, or with interruptions. Slow and gradual distension of the cæcum is best adapted to overcome the competency of the ileo cæcal valve, by effecting diastasis of the margins of the valve. A rubber balloon holding from 2 to 4 gallons (10 to 20 litres) recommends itself as the most efficient and safest instrument for making rectal insufflation for therapeutic or diagnostic purposes.

The following experiments were made to determine:

4. The Amount of Pressure Necessary to Force Hydrogen Gas through the Entire Alimentary Canal by Rectal Inflation.

Experiment 20.—Dog, weight 35 pounds (16 kilograms). Immediately after death rectal inflation of hydrogen gas was made, and a pressure of one pound (.4 kilograms) sufficed to distend the entire abdominal cavity, and when a tube was introduced into the stomach and a burning taper applied to its end a blue flame at once appeared and continued as long as the inflation was kept up under the same pressure.

Experiment 21.—Dog, weight 12 pounds (5 kilograms). Under ether narcosis rectal inflation of hydrogen gas from rubber balloon. The ileo-cæcal valve offered very little resistance, and as soon as the manometer registered one pound and a half (.6 kilogram) of pressure the gas escaped through the stomach tube which had been introduced previously, and on applying a lighted taper it burned with a continuous flame as long as the inflation was continued.

Experiment 22.—Dog, weight 20 pounds (9 kilograms). Experiment and result same as in last; the pressure never exceeded one pound and a half (.6 kilogram).

Experiment 23.—Dog, weight 19 pounds (9 kilograms). In this experiment no anæsthetic was used, and in consequence the pressure had to be increased to three pounds (1.3 kilograms) before the gas escaped through the stomach tube. On account of the violent contractions of the abdominal muscles the escape of gas was intermittent, the flame being frequently extinguished by an absence of the gas.

Experiment 24.—Dog, weight 21 pounds (10 kilograms). The animal being completely under the influence of ether the abdomen was opened in the median line, and the ileo-cæcal region made accessible to sight. Hydrogen gas was inflated per rectum, and under a pressure of three-quarters of a pound (.3 kilogram) readily passed the ileo-cæcal valve, and under one pound of pressure it ascended the intestinal canal, and in a few seconds reached the stomach. A tube was introduced into the stomach, and as the gas escaped it was ignited and burned with a steady flame.

Experiment 25.—Dog, weight 18 pounds (8 kilograms). Rectal insufflation of hydrogen gas, the dog being fully under the influence of an anæsthetic. The colon and cæcum were only slightly distended when the gas under one-quarter of a pound (.1 kilogram) of pressure passed the ileo-cæcal valve. Under one pound (.4 kilogram) of pressure the abdomen became uniformly distended and tympanitic, and when a tube was introduced into the stomach the escaping gas was ignited and burned with a steady flame as long as the pressure was continued.

Experiment 26.—Dog, weight 20 pounds (9 kilograms). Animal etherized, and when completely relaxed hydrogen gas was inflated per rectum, and passed the ileo-cæcal valve under a pressure of half a pound (.2 kilograms). The stomach became distended under a pressure of one pound and a half (.6 kilogram), and on the introduction of a tube the escaping gas was ignited and burned with a continuous flame as long as the manometer registered half a pound (.4 kilogram) of pressure. In all animals where the insufflation was not complicated by abdominal section no upleasant symptoms followed the experiments. All of the animals recovered as rapidly as after an ordinary ether narcosis. In all of the experiments the pressure fell rapidly after the ileo-cæcal valve had been opened, but the pressure had again to be increased before the gas reached the stomach. It usually required one-half to one pound more pressure to force gas through the entire alimentary canal than when it was forced only through

the ileo-cæcal valve. Whenever it becomes desirable to conduct the hydrogen gas a considerable distance along the intestines, or through the entire alimentary canal, it is exceedingly important to proceed slowly with the inflation, as under slow distension on half a pound (.2 kilogram) of pressure will accomplish in time a greater degree of distension than four times this amount of pressure if the force is applied quickly, and only for a short time, and is attended by much less risk of injury to the coats of the intestines. I am quite convinced that in the dog rectal insufflation of hydrogen gas made under a pressure of one-quarter of a pound, if made very slowly, the abdominal walls being completely relaxed by an anæsthetic, will not only overcome the resistance offered by the ileo-cæcal valve, but will prove sufficient to force the gas through the whole length of the alimentary canal. I have now sufficiently demonstrated the permeability of the ileo-cæcal valve and the entire alimentary canal in animals and man to rectal insufflation of air and gas, and I shall now endeavor to establish the safety of this procedure as a diagnostic and therapeutic measure by showing:

II. THE RESISTANCE OF DIFFERENT PORTIONS OF THE GASTRO INTESTINAL CANAL TO DIASTALTIC FORCE.

a. Stomach.

Experiment 27.—Large, healthy, adult dog. Experiment made immediately after death. Stomach *in situ*. Œsophagus tied and distension made with a force pump from pyloric orifice, the organ being rapidly dilated with air. When the manometer registered eight and one-half pounds (3.8 kilograms) of pressure the stomach was distended at least eight times its normal size, when a rent in the peritoneal covering an inch and a half in length parallel to, and near the omental attachment occurred.

Experiment 28.—Middle aged man, died of sepsis. The whole gastro-intestinal canal showed marked evidences of septic gastro-entero-colitis, the mucous membrane being softened, very vascular, and dotted with numerous hæmorrhagic infarcts. Organ *in situ* inflated with air in the same manner as in last experiment. Longitudinal rupture of peritoneal coat along anterior surface under two and one-half pounds of pressure (1.1 kilogram), and when it was increased to three pounds (1.3 kilograms) the whole thickness of the wall at the lesser curvature ruptured.

b. Small Intestines.

Experiment 29.—Subject same as in experiment 28. Lower portion of ileum under five pounds (2.2 kilograms) of pressure became emphysematous along mesenteric attachment, and ruptured completely as soon as the manometer registered five and three-fourths (2.3 kilograms) pounds of pressure.

Experiment 30.—Dog, weight 20 lbs. (9 kilograms). Immediately after death the lower part of the ileum, with mesenteric attachment intact, was gradually distended and remained intact until a pressure of ten pounds (2.5 kilograms) was reached, when air escaped between the two serous layers of the mesentery, showing that minute ruptures at numerous points had taken place. When the distension had reached its maximum the segment of bowel inflated was elongated twice its normal length.

Experiment 31.—Upper portion of ileum of same animal when distended to its utmost gave way under a pressure of eight pounds (3.6 kilograms), the peritoneal coat on convex side rupturing to the extent of 2 inches (51 mm.) parallel to the axis of the bowel.

Experiment 32.—The middle portion of the small intestines, when subject to a pressure of eight pounds (3.6 kilograms), sustained a longitudinal rupture of the peritoneum on convex surface, and remaining tunics gave way when the pressure was increased to nine pounds (4 kilograms).

c. Colon.

Experiment 33.—Subject same as experiments 28 and 29. Experiment was made twenty-four hours after death. Colon and cæcum apparently very much softened and mucous membrane in a state of inflammation. One foot (3 d. m.) of the transverse colon isolated and gradually distended when the peritoneal coat along the border of one of the longitudinal bands ruptured under a pressure of two pounds and a half (1 kilogram). The peritoneal laceration became very extensive before the remaining tunics ruptured under a pressure of four pounds (1.8 kilograms).

Experiment 34.—Dog, weight 18 lbs. (8 kilograms). Immediately after death the ileum was tied just above the cæcum and the inflation made per rectum. Air was pumped in gradually with a force-pump and when the pressure reached ten pounds and a half (4.7 kilograms) air escaped between the peritoneal layers of the meso-colon; at this stage the longitudinal distension of the bowel exceeded twice its normal length.

Experiment 35.—Dog, weight 23 lbs. (10 kilograms). Experiment the same as the preceding. Air was pumped in rapidly until the mercury gauge registered ten and a half pounds (4.7 kilograms) of pressure, when the sigmoid flexure on its free surface gave way with a loud report, the rent being about one inch and a half (38 mm.) in length.

Experiment 36.—Dog, weight 18 lbs. (7 kilograms). Entire colon distended by rectal inflation of air, the ileum being tied just above the ileo-cæcal valve. Under a pressure of six pounds (2.7 kilograms) the peritoneum ruptured in a longitudinal direction, opposite the meso-colon, and the remaining tunics gave way a little later under the same pressure.

These experiments are of the greatest importance in showing that the pressure which was found necessary to apply in rupturing a healthy intestine was greatly in excess of that which is required to force air through the ileo-cæcal valve, or even the whole length of the alimentary canal. It only requires from one-quarter of a pound to a pound and a half (.1 to .7 kilograms) of pressure to force air through the ileo-cæcal valve, and from half a pound to two pounds and a half (.2 to .7 kilograms) to force it from anus to mouth, while even the weakest portion of the gastro-intestinal canal effectually resisted a distending force of from eight to ten pounds (3.6 to 4.5 kilo-

grams). The experiments on the human cadaver, where the resisting power of the gastro-intestinal canal to diastalic force was greatly reduced by antemortem pathological changes, show that under such circumstances it would have been safe to resort to inflation, as the pressure required to rupture the colon or small intestines exceeded that which has been found adequate to force air or gas beyond the ileo-cæcal valve, or even the entire length of the alimentary canal. When an intestine is distended to its utmost capacity slowly by inflation of air or gas, and the pressure is maintained uninterruptedly, rupture occurs at one of two points, either a longitudinal laceration of the peritoneal coat takes place on the convex surface of the bowel opposite the mesenteric attachment, or minute ruptures on the mesenteric side give rise to extravasation of air or gas between the two serous layers of the mesentery, in either case, if the pressure is increased, complete rupture takes place at the point where the laceration first commenced.

III. DISTENSION OF GASTRO-INTESTINAL CANAL BY RECTAL INSUFFLATION OF HYDROGEN GAS.

This part of the paper contains an account of the experiments which were made preliminary to the practical application of the hydrogen gas test as a diagnostic measure in penetrating wounds of the abdomen, and furnish only so many more demonstrations of the permeability of the ileo-cæcal valve and the entire alimentary canal to rectal inflation of hydrogen gas.

Experiment 37.—Dog, weight 15 lbs. (6 kilograms). Under ether anæsthesia hydrogen gas from rubber balloon was slowly forced into the rectum until the entire anterior abdominal wall had become uniformly distended and tympanitic, when the distended stomach was punctured with a large needle of an aspirator and gas escaped in a steady stream, and when ignited burned with a continuous flame. After a considerable portion of gas had been evacuated in this manner the upper abdominal region receded and the flame was extinguished. The animal recovered without any untoward symptoms.

Experiment 38.—Dog, weight 17 lbs. (7 kilograms). Without anæsthesia hydrogen gas was inflated per rectum until it escaped through a tube which had been introduced into the stomach. As it escaped from the stomach tube it was ignited and burned with a large blue flame. The abdominal muscles were so rigid that distension was never well marked, and the inflation required a good deal more force than in animals where muscular rigidity has been overcome by an anæsthetic. The dog remained perfectly well after the experiment and in a few hours the remaining tympanites had disappeared.

Experiment 39.—Dog, (weight 35 lbs. (15 kilograms). No anæsthetics used. On account of rigidity of abdominal muscles it required persistent efforts to force hydrogen gas from rubber balloon per rectum through the whole alimentary canal. As soon as the stomach had become distended by the gas the animal vomited, at the same time gas escaped by repeated eructations. The animal manifested no signs of suffering after the experiment.

Experiment 40.—Dog, weight 27 lbs. (12 kilograms). Under anæsthesia hydrogen gas was inflated per rectum until it escaped through tube which had been introduced into the stomach; a lighted taper was applied to the free end of the tube and the gas ignited and burned with the characteristic blue flame.

Experiment 41.—Large Newfoundland dog. Under anæsthesia a duodenostomy was made, and hydrogen gas injected per rectum and ignited as it escaped from a rubber tube which had been inserted into the distal portion of the bowel through the fistula.

Experiment 42.—Adult male; abdominal organs healthy; no anæsthesia. Inflation of hydrogen gas per rectum. The gas was stored in a four-gallon (9 litres) rubber balloon and was forced into the rectum by compression. As the distension progressed the colon could be distinctly mapped out from sigmoid flexure to cæcum by inspection and percussion. As soon as the cæcum had become visibly prominent a stethoscope was applied over the ileo-cæcal region, and as the valve became incompetent by overdistension of cæcum a distinct gurgling sound could be heard as the gas entered the ileum. Whenever inflation was arrested the gurgling sound disappeared and was heard again whenever the ileo-cæcal valve was opened by renewed inflation.

Distension of the small intestines was attended by resonance and prominence of umbilical and hypogastric regions. The incompetency of the ileo-cæcal valve was invariably announced by a reduction in the pressure. The patient complained of a sensation of distension in the umbilical region and intermittent colicky pains which, however, disappeared completely after a few hours. The pain appeared to be less severe than after similar experiments with inflation of air.

Experiment 43.—Young man in comparatively good health. Inflation same as in preceding experiment. Ausculation over ileo-cæcal valve revealed the same sounds as the gas escaped from the colon into the ileum. The sound seemed to vary somewhat according to the size of the opening in the valve and the force used in making the inflation, and always disappeared as the valve closed after suspension of inflation. The colicky pains subsided as the small intestines emptied themselves of their new contents. The assistant who compressed the rubber balloon was always able to announce the beginning of the incompetency of the ileo-cæcal valve by experiencing a sudden diminution in the pressure.

Experiment 44.—Adult male, suffering from gastric catarrh. Hydrogen gas inflation per rectum to extent of causing great distension of abdomen which caused the hepatic dulness to ascend at least two inches. Auscultatory signs the same. Sharp colicky pains in the umbilical region were relieved by a free escape of gas through rectum.

Experiment 45.—Hysterical female. Abdomen flat and dull on percussion from umbilicus to pubis; no resonance over sigmoid flexure. Rectal inflation with hydrogen gas. Compression of rubber balloon corresponding to only one-fourth pound (.1 kilogram) of pressure readily dilated the whole colon, its course

being indicated by a distinct prominence and tympanitic resonance from sigmoid flexure to cæcum. Under the same pressure the gas escaped with little or no resistance through the ileo-cæcal valve from the colon into the ileum, the occurrence being attended by the characteristic auscultatory sounds and followed by distension and resonance of space from umbilicus to pubis. Amount of gas inflated about four litres. The patient complained of some pain in the region of the splenic flexure of the colon during the distension of the colon, and later of slight intermittent pain in the region of the umbilicus.

Experiment 46.—Middle-aged woman, suffering from retroversion of the uterus. Abdomen flaccid and dull on percussion in the median line from umbilicus to pubis. Rectum distended with hardened fæces. Hydrogen gas inflated in the usual manner. The mercury gauge registered two and a half pounds (1 kilogram) of pressure before the gas reached the sigmoid flexure, after this it fell to one pound (.4 kilogram) and the inflation progressed without any further resistance. As soon as the gas passed through the ileo-cæcal valve the pressure fell to three-quarters of a pound (.3 kilogram) and remained so during the inflation of the small intestines, slight variations marking the opening and closing of the ileo-cæcal valve. As the umbilical and hypogastric regions became prominent and tympanitic the patient complained of a griping pain. About eight litres of gas were injected. A few hours after the experiment all symptoms had disappeared.

Experiment 47.—Female recently operated on for laceration of perineum. Rectum empty. Abdomen flaccid; umbilical, hypogastric, and right iliac regions dull on percussion. The inflation was made very slowly and the pressure never exceeded 1 lb. (.4 kilogram). As the large intestine became distended the transverse colon came plainly into view. On auscultation over the ileo-cæcal valve the escape of gas into the ileum was marked by a blowing sound, which in pitch was increased or diminished by the degree of pressure. As the lower portion of the small intestines became distended the lower part of the abdomen became prominent and tympanitic, and the patient complained of colicky pains. About 3 litres of gas were inflated. In half an hour the patient appeared as well as before inflation.

Experiment 48.—Middle-aged physician suffering from typhlitis. This was the second attack, and the acute symptoms had subsided. Over the cæcum a circumscribed area of dulness and tenderness. On palpation it appeared as though the swelling were adherent to the anterior abdominal wall. The area of dulness was outlined externally by pencil marks before inflation was commenced. As the colon became distended under a pressure of ¼-lb. (.1 kilogram), the circumscribed, indurated region became more prominent, imparting to the palpating fingers the feeling of hardness, but on percussion it was resonant, showing conclusively that the inflamed and indurated wall of the cæcum had been lifted forwards by the pressure of the gas. Under the same pressure the gas escaped in a continuous stream into the ileum, its passage through the ileo-cæcal valve being attended by a well-marked blowing, gurgling sound. The patient felt the entrance of gas into the ileum distinctly and complained soon after of a slight colicky pain in the umbilical region. The space between umbilicus and pubis, which before inflation was completely dull on percussion, now became more prominent and tympanitic. Only 2 litres of gas were used in this experiment.

Experiment 49.—Young physician in perfect health. Region between umbilicus and pubis perfectly dull on percussion, also left iliac fossa. Inflation of 4 litres of hydrogen gas under ⅓-lb. (.15 kilogram) pressure. The outlines of the distended colon could be clearly seen and marked out by percussion before the gas escaped into the small intestines. The passage of gas through the ileo-cæcal valve was again attended by a well-marked gurgling sound, after which the entire abdomen became prominent and tympanitic. The patient felt a sensation of distension during the inflation of the colon, and as the small intestines became distended complained of griping pains, gas escaped freely by eructations and per rectum, which soon relieved the colicky pains in the umbilical regian.

Experiment 50.—Medical student in robust health. Region from umbilicus to pubis flat on percussion, while the course of the entire colon was tympanitic. Rectal inflation with hydrogen gas. As the resistance of the ileo-cæcal valve was overcome the mercury gauge registered ½-lb. (.4 kilogram) of pressure. The passage of gas through the ileo-cæcal valve was attended by a gurgling sound which was heard at some distance by a number of persons present in the room. Later a continuous blowing (almost amphoric) sound could be heard over the ileo-cæcal valve. The subject of the experiment was conscious of the passage of gas from colon into ileum, and soon after complained of a colicky pain which he referred to the umbilical region. The whole abdomen became uniformly distended and tympanitic on percussion, and the distress caused by the great distension was only relieved by a free escape of gas by eructations and through the rectum. Four litres of gas were used in this experiment.

Experiment 51.—Young physician in good health. Rectal inflation of 4 litres of hydrogen gas under a pressure of only ⅓ lb. (.15 kilogram). Distension of colon well-marked previous to escape of gas through the ileo-cæcal valve. As soon as the gas entered the ileum the middle and lower portion of the abdomen became distended and tympanitic. The inflation was continued until the stomach became distended amd gas escaped by eructation. The subject of the experiment complained of quite severe colicky pains as long as the small intestines remained distended by gas.

Experiment 52.—The writer of this paper, being desirous of experiencing himself the sensations which would be caused by inflation of hydrogen gas, submitted himself to experimentation under a pressure of ½ lb. (.4 kilogram). Nearly 6 litres of gas were inflated *per rectum*. The distension of the colon caused simply a feeling of distension along its course, but as soon as the gas escaped into the ileum colicky

pains were experienced, which increased as insufflation advanced, and only ceased after all the gas had escaped, which was the case only after an hour and a half. When the intestines and the stomach had become fully distended the feeling of distension was distressing, and was attended by a sensation of faintness which caused a profuse clammy perspiration. A great deal of the gas escaped by eructation, which was followed by great relief. The colicky pains attending inflation of the small intestines by air or gas are evidently caused by increased peristaltic action of the bowels in their attempt to expel their contents, as it always assumed an intermittent type and subsided promptly after the escape of the gas.

In none of these experiments did the pressure exceed 1 lb. (.4 kilogram) in overcoming the resistance offered by the ileo-cæcal valve, and often a steady, long-continued pressure of ¼ or ⅓ lb. (.1 to .15 kilogram) sufficed. Every time the ileo-cæcal valve was rendered incompetent by distension of the cæcum the pressure was promptly diminished owing to the escape of gas from the colon into the ileum. In the experiment where the inflation was made in a case of typhlitis the ileo-cæcal valve offered no resistance, and the gas escaped freely into the ileum; the valve in all probability had been rendered partially or completely incompetent during the course of the local inflammation, or the indurated, thickened walls of the cæcum, when distended during the inflation, were better adapted in effecting incompetency of the valve. These experiments also furnish strong proof of the fact that inflation, to be safe and effective, should be done very slowly under a low, steady pressure, continued only for a short time, and is attended by no risks whatever of rupturing a healthy intestine and, when cautiously practiced, can be resorted to even in cases where the resisting power of the intestinal wall has been diminished by antecedent pathological processes.

As I was searching for an innocuous, non-irritating gas which, when inflated into the gastro-intestinal canal, would escape into the peritoneal cavity in case a wound or perforation existed, and had decided on trying hydrogen gas, it became necessary to study experimentally the effect of this gas on the different tissues of the living body. The numerous inflation experiments on man and dogs have demonstrated the safety of pure hydrogen gas when employed in this manner, as not in a single instance were any immediate or remote toxic symptoms observed which could be referred to absorption of the gas; hence we have the assurance that the inflation of a large quantity of hydrogen gas is unattended by any risk whatever as far as intoxication is concerned. The following experiments also show the innocuity and non-irritating qualities of hydrogen gas when brought in contact with the most susceptible tissues to inflammatory reaction in the living body; at the same time they also show that hydrogen gas is removed by absorption in a comparatively short time when injected into serous cavities or into the subcutaneous connective tissue.

(To be concluded.)

THE APPENDIX VERMIFORMIS; ITS FUNCTIONS, PATHOLOGICAL CHANGES AND TREATMENT.

Read in the Section on Surgery at the Thirty-ninth Annual Meeting of the American Medical Association, May, 1888.

BY J. McFADDEN GASTON, M.D.,

PROFESSOR OF SURGERY, SOUTHERN MEDICAL COLLEGE, ATLANTA, GA.

Preliminary to a consideration of the function pertaining to any organism, it is requisite to understand its structure, or in other words, the physiology of a part depends upon its anatomy.

The presence of the appendix vermiformis in man and in some of the higher order of apes, while absent in most quadrupeds and other inferior animals, may perhaps lead the followers of Darwin to the conclusion that the missing link is to be sought in this development; but I have no inclination to enter into the abstruse question of evolution, and only regret that we are precluded from receiving any information by a study of comparative anatomy in respect to this unique appendage. If the dog and cat were supplied with this structure, the facility for making experiments upon them might enhance very much our knowledge of its normal and abnormal conditions, whether idiopathic or traumatic; but the door is shut to all such investigation, and a human subject does not fully avail for satisfactory data in regard to the structure of the appendix vermiformis and its office.

In its general outline it is subject to great variation of size and position, being found in different subjects from three to six inches in length, and lying diversely in its relations to the cæcum. Its diameter admits of considerable changes owing to the various contents of the canal, whether gaseous, mucus or serous. This tube is of the same size from its attachment to the lower walls of the cæcum to its termination in a blind pouch at its free extremity. When empty or only occupied with mucus, its diameter is ordinarily about one-fourth of an inch. There is usually a mesenteric attachment to the wall of the cæcum and this duplicature of the peritoneum invests its entire length, while a muscular layer is found between this and the mucous membrane which lines it. The opening into the cæcal cavity has a valvular arrangement of the mucous membrane which is capable of closing the orifice, and doubtless prevents the entrance of foreign bodies ordinarily into this blind pouch. It becomes, however, dilated under certain circumstances so as to admit of the passage of small solid masses through this orifice, and they became arrested in the tube proving a source of disturbance. In view of that fact, this structure has been regarded by some writers as a trap, which is very prone to cause the obstructions of its canal by foreign bodies, as when once introduced there is perhaps a kind of constriction of the orifice which interferes with their escape. That there exists in the middle coat of the appendix, longitudinal and circular, muscular fibres, which by their contraction and relaxation, alternately, provide for a serous or mucus exudation, and after certain modifications in it, promote its expulsion, is very

evident from observation of the histological elements of its organization. Whether any considerable proportion of the fæcal matter enters the cavity of the appendix has not been determined, and it seems most probable that the quantity may be small in view of the relative size of this diminutive tubular sac and the capacious cæcal pouch which receives the contents of the ileum through the ileo-cæcal valve. The capacity for distension being limited in extent precludes the view, that the cavity of the appendix, may serve as a diverticulum in cases of undue accumulation of fæcal matter in the colon.

An opportunity has been afforded to me recently of noting that obstruction of the descending colon from an organic stricture, inducing such distension of its walls by the retained contents as to result in perforation and death, did not materially affect the size of the appendix vermiformis. It cannot, therefore, be regarded as a safety valve for the cæcum, but rather as a loop-hole for the entrance of matters prejudicial to it, and the adjacent structure; and may be appropriately regarded as a danger signal to warn the organism of approaching trouble.

The location of the orifice of the vermiform appendix at the most dependent part of the caput coli while the entrance of the ileum through the ileo-cæcal valve is above and at the inner side, affording a direct passage to the contents of the alimentary canal into the cæcum as a receptacle, would seem to favor the conclusion that some change is there brought about by the contact of fæcal matter with the emanations from the appendix.

Its mucous lining, according to Gray, is furnished with a large number of solitary glands, and Satterthwaite states in his "Manual of Histology" that "in the vermiform appendix we find the collection of solitary lymph-follicles so closely placed that the space left between adjoining glands does not equal in diameter that of these structures themselves."

On the other hand we learn from Quain, that, "in man the chief function of the cæcum is absorption, as is shown by the great number of lymphatics in its walls;" while Laudois tells us that, "the contents assume the character of fæces and become formed in the lower part of the great intestine."

The high authority, Littrè, warrants the assertion that, "it is in the cæcum, the residue of the alimentary substances assumes all the characteristics of fæcal matter." In the absence of other explanation of the peculiar odor imparted to the contents of the colon from this point forward, it is fair to infer that this modification comes from the influence of the appendix vermiformis, either by some chemical or vital process.

I have not such data to record in support of this view as will stand the test of scientific criticism. Being without material for vivisections in the absence of wombats and apes, while the opportunities for elucidation from observations upon the human body are few, upon the principle of exclusion, it is expected that this theory of the function of the appendix may be entitled to consideration. As its province in the animal economy has not heretofore been pointed out by physiologists, I would appeal to them to recognize this hypothesis on the same basis that the owner of a certain historic dog in the backwoods of North Carolina claimed that he was a good possum dog—that he had tried him thoroughly for every other species of game without discovering any hunting qualities, and hence he concluded that he ought to be good to catch the opossum. So of the appendix for getting up a stink.

Reasoning upon the general principle that all the organs of the human body are fitted for the discharge of useful purposes in the animal organism, we are not warranted in concluding that the appendix vermiformis is an exception to this rule of the fitness of things, and it behooves us to investigate seriously its function. We should satisfy ourselves as to its relations to the digestive and excrementitious processes, with its position as a sentinel at the gate-way, without participating, so far as known thus far, in the work of alimentation or defecation. The antiseptic property of sulphurous gases is well known, and the presence of sulphuretted hydrogen in the colon cannot be accounted for by any process of decomposition developed in its contents, as the cases of arrest of fæcal matter with or without impaction, are not attended with such results as would ensue from such a process. We are therefore warranted in attributing the absence of any signs of degeneration to the presence of an antiseptic element, which is developed in the vermiform appendage and intermingled with the fæcal mass in the cæcum which serves as a reservoir, where this process may be undergone as the residue of the alimentary substances is poured out of the small intestine. The effectual security against regurgitation by the structure of the ileo-cæcal valve and the barrier afforded by the valvular opening of the appendix to the entrance of fæcal matter into its cavity, while gaseous emanations or its natural secretion of mucus may pass out into the caput coli, favor the view that an important office belongs to the appendix vermiformis. It doubtless preserves the contents of the alimentary canal from decomposition during their progress through the colon, beyond that effect claimed for the admixture of bile elements with the excrement. It is evident that ordinarily the fæces do not enter the canal of the appendix owing to the duplicature at its orifice, and when by failure of this impediment, solid matters, fæcal or otherwise, enter its cavity, there is no capacity in its walls for their expulsion. It hence follows that in case of such accidents we find that an inflammatory process is developed in the appendix.

The number of cases in which the appendix has been removed by operative procedures or has been obliterated by disease are thus far comparatively few, and the observations upon the effects of such lesions have not been reported, so as to throw any light upon the function of this development which characterizes a higher order of animal creation. The vague conception of its rudimentary nature seems to have taken possession of physiologists without any show of reason or any foundation in fact, so far as the study of comparative anatomy can aid in directing us to a satisfactory conclusion. If it can be made to appear that the native population of our

primeval forests who subsisted largely upon herbs and roots, with an admixture of animal food, presented any marked increase of development in this respect it may go towards sustaining this claim. But I am not aware of any such facts to corroborate this far-fetched hypothesis, nor are there any data available from history of the human race since the creation of mankind, which tend toward the confirmation of this view; and it is only an acknowledgment of ignorance on the part of those who would attempt to bolster up this theory without facts.

The increased number of disorders of the appendix vermiformis which have been recognized in these latter years might lead to an inference that it is destined to entire obliteration in the course of time, were it not evident that many affections of the appendix have been formerly ignored from the lack of proper observation in diagnosticating the troubles of this region. Should it appear in the future that the appendix vermiformis may be removed with impunity, then it will only prove what has been demonstrated in the case of other important members of the body, that they were not essential to the human organism. But no one would undertake to set aside the important office of the ovaries in the role of creation, because, forsooth, they had been removed without detriment to the health and comfort of the individual subsequently. It strikes me forcibly that the practice of oöphorectomy resorted to so frequently of late for slight causes, and in some instances without indications of disease in the organ, may at no distant day be held as an excuse for cutting down upon the vermiform appendage upon the slightest provocation, for the purpose of ligating and excising it, and thus ridding the individual of further trouble from its disorders. How far this might be justified from a consideration of the great risk to life attending inflammation and perforation of its walls, in the absence of trustworthy data for an early diagnosis, depends upon the importance which may be attached to the function of this peculiar structure, and surgeons must await with interest the effects of its removal.

Whether inflammation is developed in this structure independent of mechanical irritation from the entrance of foreign bodies and the formation of fæcal concretions, has not been clearly demonstrated. Clinical observations in cases that yield to treatment leave doubts as to the real seat of disease referred to this region, and so far as noted in post mortem examinations, the lesions have for the most part been traced to the presence of a mechanical irritant. While some have claimed that inflammation is set up in the vermiform appendage as a result of derangement of the digestive apparatus, and others have supposed that the entrance of germs into its cavity has developed morbid processes in its structure, the facts go to prove that such causes of diseases are rare in comparison with the troubles growing out of local irritation having a mechanical origin. It is remarkable that the presence of such foreign bodies rarely produces any serious inconvenience until perforation of the wall of the appendix vermiformis ensues, and even then the localization of the pain and inflammation is not well defined either by the sensations of the patient or by objective symptoms recognized in a physical examination by the practitioner. There is an absence of preliminary indications, pointing to the nature of the inflammatory process at the incipiency of disorders of the appendix vermiformis, which presents a problem of difficult solution for the surgeon. At this early stage there may, however, exist a certain degree of sensitiveness upon pressure immediately over the site of the appendix, and this tenderness revealed by cautious palpation may serve for the recognition of an incipient inflammation when there is no perceptible thickening or induration in the tissues of the appendix. It is clear that the causative influence, of whatever character it may be, must up to a certain point, be of gradual operation in the development of inflammation. During this stage it is of the greatest importance to be able to recognize its presence and progress. Not only the external examination should be carefully made, but a digital exploration by the rectum should be directed to the discovery of the seat of the inflammation in the appendix.

There are in most instances some concomitants of the local trouble manifested in derangement of the alimentary canal, perhaps of a reflex order, prior to the extension of the inflammatory process to the adjoining structures. In the early history of appendicitis it has been noted that there may occur either a disposition to frequent evacuations or a state of intestinal torpor, in which it is difficult to arouse the peristaltic action of the bowels either by purgative medicines or enemata. During this period the constitutional disturbance is not very marked, and yet there exist usually a febrile state with slight rise of temperature, so that nice discrimination will detect a departure from a normal condition of the system.

While the presence of fæcal concretions or other foreign bodies in the canal of the appendix may be tolerated for a greater or less period without any manifestation of trouble in the ordinary performance of the functions of the intestines, there are good and sufficient grounds for the conclusion that intestinal derangement from other sources may become an exciting cause of the inflammatory process from a local irritant. The history of cases in which death has occurred from other diseases presents quite a number of instances in which there are unmistakable indications of disease in the appendix which has terminated by resolution. But it is found generally that inflammation set up in the wall of the canal by a mechanical irritant leads to perforation and extravasation of the contents, accompanied by characteristic shock and followed by diffused inflammation. This is the dividing line between two distinct phases of symptoms, and whatever may have obscured the case previously, it is for the most part well defined after this grave result.

There may be only a circumscribed involvement of the surrounding structures, exciting adhesive inflammation in the serous tissues which shut in the exudation from the cavity of the appendix and thus forming a local abscess. But usually the septic matter permeates in different directions and sets up general

peritonitis, with a train of constitutional troubles, attended with marked cerebral disturbance and vital depression.

An observation of a peculiar pain in the penis from perforation of the vermiform appendage has been reported by Tiffany, and the same marked feature occurred in my two cases of perforation which were verified by post-mortem examinations. In the elaborate paper of Fitz on "Perforative Inflammation of the Vermiform Appendix," some stress is laid upon the disturbance of the urinary and genital organs. During the first three days following the onset of the pain connected with perforation micturition is occasionally disturbed. Perhaps unusually frequent on the first day it is likely to be difficult on or after the third day. In certain instances the use of the catheter is required. The right testicle may be retracted and swollen, in which case the course of the pain is apt to be toward this gland.

We can understand how the escape of irritating matter from the appendix should cause trouble by transmitting inflammation to the contents of the abdomen, including the pelvic viscera, but it is not apparent that such disturbance of the urinary and genital organs results from general peritonitis induced by other causes, and the pain in the penis cannot be attributed to the peritonitis. If it should be found that this painful development in the penis is present in the early period of the appendicular inflammation, and is not the result of perforation, it would aid very much in making the diagnosis at this stage.

We have the authority of a standard work on Pathological Anatomy and Histology for stating that the most frequent form of inflammation of the appendix is a suppurative one. The appendix is swollen and congested; its walls are infiltrated with pus; at some points there may be necrosis and sloughing of portions of its wall. Within the cavity of the appendix we find fæcal concretions or foreign bodies or nothing (but mucus). Such an inflammation may terminate in resolution, but more frequently it sets up an inflammation of the surrounding tissues. This inflammation may be either a local or general peritonitis or a suppurative inflammation of the parts about the appendix. Less frequently there is a chronic inflammation of the mucous membrane of the appendix, followed by constriction of its upper portion while the lower part is dilated into a cyst filled with mucus and serum. (Delafield and Prudden.)

Another elaborate treatise on Pathological Anatomy and Pathogenesis states that typhlitis and perityphlitis imply inflammation of the vermiform appendage and parts around it.

The vermiform appendage is peculiarly adapted to catch and retain substances passing through the cæcum. Matters which have been swallowed—such as grape seed, apple pips, cherry stones and the like—and fæces may accumulate in the appendix and set up inflammation. Sometimes these become crusted over with phosphates and carbonates and so form fæcal concretions or calculi. The inflammation thus set up may extend to all the coats of the appendage, and then attack the contiguous structures, and in this way necrosis and gangrene with perforation may be caused. The issue differs in different cases. It is comparatively favorable if the inflammation continues to be circumscribed, while the exudation is moderate in amount; protective adhesions and false membranes may thus be formed about the affected spot. It is very unfavorable when perforation takes place before adequate adhesions are formed; fatal peritonitis is nearly always induced. When perforation takes place into a part of the peritoneum shut off by adhesions a burrowing fæcal abscess is produced which may burst internally or externally. Sometimes the appendage is entirely obliterated by adhesive inflammation; but if the inner or intestinal end becomes closed while the remainder continues to be patent, the natural mucus secretion may collect in the latter and distend it into a cyst. It is likewise specially noted that tuberculous and typhoid ulceration, localized in the vermiform appendage, may give rise to dangerous lesions (Ziegler).

It is not out of place to repeat what has been stated in a recent publication by me, that I cannot acquiesce in that view of pathologists which attributes the degeneration of the cæcum and appendix to a low state of vitality in their tissues, but on the contrary I hold that they are highly vitalized, and that it is from being overtaxed in the performance of functions connected with the excrementitious process that they are so subject to disease.

I agree with Agnew in considering inflammation as hypernutrition, and consider that it is an effort of nature to restore the equilibrium of the circulation, which has been interrupted by a local morbific impression from the causative agent. The inflammatory process is an attempt at recuperation of the injured part, and within certain limits it is salutary; but when it transcends the powers and capacities of the organism I infer that from the undue excitation and over action of this extraordinary impulse, there is a breaking down of the forces of the organization, which leads to disintegration and death of the structures involved. By the development of inflammation in the tissues of the cæcal region nature resents an insult to the components of this organism, and when it triumphs over the difficulties encountered resolution ensues, but if it fails, ulceration and perforation occur, leading to abscesses and peritonitis.

To illustrate the important vital connection of the ileo-cæcal structure with the general organism, I may refer to the fatal results of the resection of this division of the intestinal canal of dogs reported in my paper on obscure impediments of the intestinal canal in *Gaillard's Journal*, while resection of a portion of the ileum was followed by complete restoration of the intestine. These deaths occurred in less than twenty-four hours, indicating that they were the effect of shock, which can only be explained upon the basis of a most intimate link of association of this structure with the organic nervous system.

Being therefore convinced of the traumatic reaction on the part of the cæcal division of the intestines as a consequence of injuries or morbific impressions, I would urge a prompt recourse to curative measures.

In regard to the proceedure for the treatment of the diseased appendix, all writers are pretty well agreed upon using anodynes and keeping the patient at rest in the early stage with soothing fomentations over the iliac region; but some have resorted to a mild purgative or to an enema to secure evacuations, when the bowels are bound at the outset, and afterwards used opiates in full doses continuously. It may be put down as a dogma in the management of incipient cases of appendicitis, that perturbation of every kind is hurtful; and that masterly inactivity should be observed with a view to promote resolution of the inflammatory process, if this be possible, thus averting suppuration and perforation.

With the uncertainty that hangs over the diagnosis in the early stage of appendicular disorder, the expectant treatment is generally recognized as the most prudent course, but there is a growing tendency among surgeons to cut the Gordean knot by a decisive step, and use an exploratory operation by incision for determining the exact seat and character of the disturbance. Aggressive practitioners such as Bull and Weir, with others, have inculcated surgical interference at the earliest practicable period; and with the lights before us in the cases of this kind the surgeon is warranted so soon as he has good and sufficient reason to believe that there exist progressive inflammation of the appendix, in verifying this diagnosis by cutting down upon it. This course is indicated when the symptoms of a local and constitutional or general nature are such as to raise a presumption in favor of appendicular inflammation, in advance of those phenomena which usually accompany perforation. In other words, an exploratory operation is advisable with a view to learn the exact condition of the parts involved, and in the event there is no evidence of inflammatory action in the tissues of the appendix or cæcum, and no indurated mass can be discovered by palpation in either, after careful exploration, the incision may be closed without any probability of serious consequences.

If, however, on the contrary, appendicitis is verified, with or without the recognition of a solid body within its canal, it would be proper to ligate or suture the cæcal attachment, and excise the appendix vermiformis, as a security against further inflammatory developments in its structure. Thus all liability to the graver results of perforation would be most effectually obviated, and thus surgery of a destructive order would eventually prove to be conservative in preventing other grave consequences. The diagnosis of appendicular disorders cannot be guaranteed without an exploratory operation, as the statements of those most familiar with this class of cases, show most conclusively, and it cannot augment materially the risk to life, while it ensures a radical cure when disease exists.

An incision may be made outside of the right rectus muscle. The extension of the opening upward along the linea semilunaris would be indicated in case a suppurating track should be discovered, as was noted in my case of perforation of the appendix reported April 20, 1887, in the *Medical and Surgical Reporter*. This was shut off from the general peritoneal cavity by adhesions, so that it left the iliac fossa and reached the diaphragm on the right side, burrowing behind the liver in the form of a cloaca, which could not have been explored properly by an incision in the linea alba owing to the adhesions existing then between the intestines and the abdominal wall.

In a recent laparotomy for volvulus of the ileum near its cæcal connection such difficulty was encountered in the exploration of the seat of disease through an incision in the median line from the umbilicus to the pubes, that it was found necessary to extend my incision upwards to a point midway between the umbilicus and ensiform cartilage to effect my object. The walls of the intestine involved in the twist were agglutinated and the canal entirely occluded, with disintegration on either side of the obstruction. The cæcal segment was ligated and the other was cut beyond the gangrenous line and stitched into the median incision, after the process for artificial anus, upon closing the abdomen.

If the site of the trouble could have been known in advance, as is presumed to be ascertained in appendicitis, it would certainly have required a shorter incision in the linea semilunaris than was found necessary in the linea alba in that case. I avail myself therefore of the opportunity to modify my criticism in the paper read at Chicago, upon the opening of the abdomen at the outer border of the rectus muscle, and fully realize its advantages in operating for appendicular extravasation.

The great advantage of the several steps consists in adapting the extent of the operative procedure to the nature of the case. If there be a doubt in the diagnosis of appendicitis it is solved by a transverse incision in the iliac region, and if nothing be revealed requiring further surgical interference the opening may be closed by suturing the peritoneum with catgut in continuous form, while the fascia, muscles and skin are brought together by interrupted suture of iron-dyed silk. There will not occur much strain upon the suture in this line of union and the operation should not be carried further except when the evidence of disease in the adjacent structures demands a larger field of observation. Incisions along the linea semilunaris upward or downward with the turning aside of the corresponding flaps will afford ample scope for proceeding in cases of circumscribed abscesses or general peritonitis resulting from perforation of the appendix vermiformis.

It has been my object in this paper to direct attention to the early development of inflammation in the structure of the appendix, as its progress and termination in perforation have proved serious in most cases; and the intractability of the consequences of the extravasation of its contents, as manifested by suppuration and peritonitis, is generally recognized by surgeons.

I am not prepared to assert that a differential diagnosis of appendicitis can be assured prior to perforation, but a reasonable presumption in favor of the seat of the disorder being in the structure of the appendix, may be reached by a careful examination of the local signs and the general symptoms. In view

of the strong probability of the existence of the appendicular trouble it is claimed that an exploratory operation is justifiable in advance of any indications of perforation. We should choose the lesser evil of an unnecessary incision, rather than risk the greater, in the calamitous results of extravasation of the contents of the appendix into the peritoneal cavity accompanied by shock and followed by septicæmia. The difficulties which the surgeon must encounter from delay in resorting to an operation until perforation assures him of its necessity, should warrant him in forestalling the danger by an exploratory incision so soon as he becomes impressed with the probability of appendicular inflammation, and if realized, to be followed by radical operation.

MEDICAL PROGRESS.

SEPARATION OF THE VERTEBRÆ WITH PROTRUSION OF HERNIA.—DR. W. F. WILKINS, of Ottawa, Kansas, reports the following unique case:

Some time since we had a wind storm that did a great deal of damage, and among other houses that were demolished was one occupied by Mr. G. and his young wife. The husband was not at home at the time of the storm, but returned shortly after his house had been scattered over the vacant lots adjoining. The young wife, who was in her eighth month of gestation, while being tumbled about with the furniture and fragments of the house, was rendered insensible by the corner of a table, as she supposed, coming violently in contact with her abdomen. Pains came on the day after, and she was delivered of a male child with a peculiar "hunch on its back," as the attending physician called a hernia situated at the juncture of the dorsal with the lumbar vertebræ.

I was called to see the child on the sixth day after delivery, and found the "hunch" of a purple color and about the size of a goose-egg. After careful examination I diagnosticated the case a hernia of some description, and the parents decided to have the little fellow operated on as soon as possible. The next day, with an assistant, I anæsthetized the patient and proceeded to operate by cutting down upon the hernial sac. We made a longitudinal incision about 4 inches long, and found the vertebræ separated to the extent of ½ inch. Through the opening protruded the hernia with its contents. The spinal cord had been pushed to one side. I returned the hernia without opening the sac, carefully replaced the cord and brought the vertebræ into exact apposition. Then the question arose how to keep the bones in position? After considerable deliberation, I carbolized a silver suture and passed it through the superior intervertebral notch of the dorsal vertebra, into the superior intervertebral notch of the lumbar vertebra, through the inferior intervertebral notch of the lumbar, back on the opposite side through the superior intervertebral notch of the lumbar into the superior intervertebral notch of the dorsal vertebra, repeating this three times, and making a figure of 8 knot binding the bones firmly in position. The external wound was closed with six catgut sutures, the whole dusted with iodoform, and the dressing finished with a broad rubber bandage.

Antiseptic precautions were observed throughout the operation, which lasted about half an hour. The wound healed by first intention and the little fellow was practically well in six days.—*St. Louis Med. and Surg. Journal*, June, 1888.

TREATMENT OF ECZEMA.—MR. J. A. WETHERELL says:

Communications which in any way, by their simplicity and efficiency, tend to the advancement of the domain of practical treatment, are deserving of the consideration of all professing dermatology, and especially of those who make this branch their sole study. Having myself been a sufferer from recurrent chronic eczema for a period of five years, and consequently taken a great interest in all pertaining to it, I believe that I have discovered a new method of treating the disease. What is to follow has particular reference to the eczema simplex affecting the fingers and hands. The best procedure, possibly, will be to divide the subject into sections.

1. *Medical Treatment.*—(*a*) External. I dip pieces of lint, sufficient to surround the fingers separately, in pure liquor carbonis detergens, and apply them, surrounded by gutta-percha tissue, at bedtime. They are allowed to remain on all night. Considerable smarting is at first caused, but it soon disappears. On removing the lint in the morning the skin looks sodden, the former vesicles are often raised into small bullæ, which, however, ere long get absorbed and dry up. During the day the hand is left exposed to the open air or, better still, kept gloved in thin kid. They are washed every third day with lanoline coal-tar soap. To render the skin more pliable and soft a little lanoline is rubbed in every morning. In the course of three or four days the upper hardened cuticle comes off, in some cases as a whole, in others in large flakes, leaving a clean smooth surface, healthier, with more tonicity in it, and not so subject to undergo the catarrhal multiplication so characteristic of eczema. When much redness or heat exists, or there is an acrid discharge, or the implicated surface is extensive, we may moderate the strength of the alcoholic solution of coal tar by mixing it with (1 to 10 or 20) cold water; or the alkaline bathing, to be presently mentioned, may be tried. If there are only a few vesicles, I have often touched them over with a little pure carbolic acid, so as to bring away a mere shell of epidermis of limited area. Let us now briefly review a few of the other local methods adopted. As to ointments—*e. g.*, of bismuth, zinc, etc.—all I have to remark is that they are, like the tar method of Hebra, simply disgusting. Even the lowest menial does not care to parade the streets with his fingers or hand bandaged up with so many white linen rags, to say nothing of the small amount of relief producible. Huile de Cade or oleum rusci pyroligneum painted over the parts every day or two will soon dispel an ordinary case; but what about the, to most people, disgusting smell? The treatment verily is

worse than the disease. Bathing with saline or alkaline waters, such as are found at Harrogate, Bath, etc., alternating or combined with the application of spirituous alkaline lotions, I have great faith in, especially where the disease is extensive or there is much exudation, *e. g.*, in eczema rubrum, or the case is intractable to other means. Watering-places and the seaside, however, are not always near; nor could the patient always afford to go to them. The various gelatine, collodion, or other impermeable coatings, I consider worthless. *(b.)* Internal. Drugs, as such, are not required. To speak of treating the gouty or rheumatic diathesis by colchicum, etc., is simply ridiculous. Such terms as these should, in my opinion, be abolished, or applied only where actual attacks of gout or rheumatism exist or threaten. Should we not rather speak of such as "a constitution with a tendency to excessive formation of uric acid," or even as "uratic." To give large doses of arsenic is sheer waste of material. Very small doses often dispel scaliness; but it should only be administered in the form of some mineral water, as La Bourboule, Woodhall, etc.

2. *Dietetic Medication.*—Avoid stimulating and indigestible substances, as pickles, tea, etc. In other words, the chief materials of diet should be lean meat, milk, or cocoa to breakfast, old bread, fresh vegetables (except starchy bodies, as potatoes); no pastry. Avoid all that disagrees, especially beer and malt liquors.

3. *General Indications.*—Cleanliness in everything is very essential; clothe and diet the patient according to the changing season; avoid all local irritants; take plenty of fresh air and exercise, and by these means alone regulate the bowels and other emunctories.

In spite of all rules, cases now and then occur which withstand all treatment, baffle every effort, and cling to the sufferer for a lifetime. Such must be attacked on general principles. The plan cannot be a stereotyped one.—*Lancet*, June 2, 1888.

URETHAN AND AMYL HYDRATE IN INSOMNIA.—DRS. J. P. CROZIER GRIFFITH and ELWOOD R. KIRBY, in an article on this subject, give the records of 19 cases of insomnia treated by urethan. The records show that out of 19 cases there have been but 2 where the hypnotic action was really satisfactory. In a few others the effect was slight, or it was doubtful whether the sleep could be attributed to the action of the medicine, and would not probably have been obtained without it. In 3 cases there were unpleasant secondary effects, though in the last case the stomach was irritable to other drugs usually well borne. It may be objected that the amount generally employed (15 grains) was too small. This may possibly be true, though it is that usually recommended by the earlier writers, and which we therefore adopted. Moreover, the dose was frequently repeated in two hours or less, and in one case as much as 60 grains were given during the night without hypnotic effect. It is also true that a few cases constituted too severe a test for a simple hypnotic, as pain or persistent cough was present. We must, however, conclude that, as far as our experience goes, urethan is an uncertain and unreliable hypnotic, though in large doses it will at times prove useful, and has advantages which at least recommend it for trial in some cases.

Amyl hydrate was used in 18 cases. The results were exceedingly favorable. In only 2 cases were there any unpleasant effects; in one a temporary delirium occurred with the first dose in a rather hysterical woman; and in the other vomiting was produced, though the stomach of this patient was unusually irritable. The taste is often complained of, but we have succeeded in disguising it to some extent with liquorice, as v. Mering suggests. We have also found it very satisfactory when given in gelatine capsules, each containing 20 minims. The ordinary capsule in two parts will answer nicely for this purpose, and will retain the drug without leaking. A full glass of water should be immediately swallowed after the capsule, in order to avoid offending a possibly irritable stomach. In most cases there is no danger of this occurring.

Our results show that amyl hydrate does not always succeed in producing sleep. Particularly is this the case when pain is present, or when there is very troublesome cough. We believe it, nevertheless, to be a valuable hypnotic, more powerful than urethan or paraldehyde, and to be preferred to them; and always to be chosen in place of chloral to produce sleep, though it is not so strong as the latter drug.—*Med. News*, May 19, 1888.

ELECTRICAL TREATMENT OF SALPINGITIS.—DR. APOSTOLI records a case of hydrosalpingitis treated by his method of galvano-puncture, with excellent results, and draws the following conclusions:

1. In gynecology fever and inflammation are not to be regarded as absolutely contraindicating the methodical and proper application of the galvanic current.

2. Inflammation of the uterus and its appendages, when not in the stage of suppuration, may be advantageously treated by the galvanic current. This current, though admissible in the first stages of congestion and inflammation, I consider ought not to be used when suppuration exists, unless it be brought into action in the form of an electrical cauterization, for the purpose of making a safe and certain outlet for the matter through the vaginal wall.

3. A galvano-caustic puncture is a valuable means by which we may gain two ends: first, to check the outbreak of inflammatory action or to stop its progress; secondly, to give an easy exit to a collection of fluid, by the falling of an eschar, in any case where the cavity containing such fluid is accessible through the upper part of the vaginal wall.

4. Every inflammatory exudation presenting itself in the vaginal cul-de-sac may be treated by means of the galvano puncture, except under the condition which I shall hereafter mention.

5. This method may be easily and harmlessly employed for the treatment of certain cases of salpingitis and hydrosalpinx, on account of the close relation between the tumors and the vaginal wall.

6. In making every galvano-puncture, all the rules which I have hitherto laid down concerning the seat of the puncture, its depth, the size of the trocar, the antiseptic precautions, the repose of the patient, etc., must be scrupulously observed.

7. Two negative galvano-punctures, vaginal only, were sufficient in one case of hydrosalpinx to bring about very quickly an important anatomical change, and complete symptomatic cure.—*Brit. Med. Jour.*, May 12, 1888.

PEPPERMINT WATER IN PRURITUS PUDENDI.—DR. AMAND ROUTH calls attention to the value of peppermint water in pruritus pudendi. In pruritus due to pediculi, ascarides, an irritable urethral caruncle, an endocervical polypus, early cancer of the cervix, distension of Bartholini's ducts or glands, the leucorrhœa of vaginitis, endocervicitis, and metritis, or the irritating discharges of advanced carcinoma uteri, or to a gouty or diabetic diathesis, peppermint water excels all others, cocaine inclusive, in affording relief, whilst endeavors are being made to remove the cause. The agent here alluded to is peppermint water used as a lotion. The B. P. preparation answers well, but is bulky for carrying about, and is incapable of concentration unless rendered alkaline. This is best done by borax, as being in itself soothing and antiseptic. Patients can easily make their own lotion, as required for use, by putting a teaspoonful of borax into a pint bottle of hot water and adding to it 5 drops of oleum menthæ piperitæ and shaking well; the parts affected to be freely bathed with a soft sponge. If no cracks or sores are present, this lotion will remove the itching, but if there be eczema or a rawness from scratching, it is inapplicable. Olive oil, with 5. grs. of iodoform to the ounce, is then more useful. The greatest and most permanent relief is afforded in the neurosal form, especially in the pruritus which often accompanies pregnancy. It is also very useful in the pruritus which occurs at the climacteric, or in elderly women, in whom it may be only part of a general pruritus, and also in those cases of women of all ages where the urine simultaneously becomes of very low specific gravity without any evidence of having a gouty or granular kidney as a remote cause.—*Brit. Med. Jour.*, April 14, 1888.

KEPHIR AND ITS USE AS AN INFANT FOOD.—DR. LONGSTREET TAYLOR has found kephir useful in feeding marasmic and hand-reared infants. He considers that it is superior to peptonized preparations and koumiss. The former is theoretically perfect, but practically not always satisfactory, either because the process is carried on too far or because injurious ptomaines are introduced during the process of preparation. The latter is too expensive and too difficult to obtain ever to be of much general service. Kephir is a product of the fermentation of cow's milk by which the thick coagulum which would otherwise form is broken up into fine flocculent flakes, which are much more amenable to the influence of the gastric juice. It must not be used after it has become too old and sour, as in this state it is neither palatable nor digestible. For young infants only the weak or young kephir in the first stage of fermentation should be used. It should be given lukewarm, *i. e.*, about 75° F. If the infant is less than a month old it may be diluted with one-third of water, the proportion of water being gradually diminished so that when the infant is six weeks old it may take the kephir undiluted.—*Arch. of Pediatrics*, May, 1888.

MODE OF OBTAINING VACCINE LYMPH WITHOUT PUNCTURING THE VESICLES.—In the *Brit. Med. Jour.*, April, 1888, DR. GRIGG describes a method of obtaining lymph without puncturing the vesicle, which does away with the chance of contamination with blood, and lessens the risk of subsequent inflammation. It is as follows: A small bead of pure glycerine is dropped upon the centre of each pock, then the top of each pock is rubbed with a smooth blunt instrument (the round glass head of a shawl-pin does excellently). After the lapse of two or three minutes the bead of glycerine will have increased to nearly double its size, especially if the vesicle contain a good supply of lymph. If necessary, a second drop of glycerine may be applied after the first has been used, and even a third. Another advantage in this plan is that it is not necessary to hold the infant's arm, and consequently it does not become troublesome and difficult to convey the lymph from one arm to another.

CONDURANGO.—PROFESSOR OSER, of Vienna, who has been making trials of condurango bark in carcinoma and other diseases of the stomach, finds that it has an excellent effect on the appetite and that it relieves over-sensitiveness. Some patients can take it for months without any unpleasant symptoms, while in others it soon sets up nausea, which cannot be prevented either by the simultaneous administration of correctives or by the employment of different preparations of the bark, such as the vinum or the liquor. Condurango appears to Professor Oser to deserve a place in our materia medica as a symptomatic remedy, but as to its exerting any specific action on malignant disease, he still holds to his old dictum that the only hope of cure in cancer of the stomach by means of drugs lies in the possibility of a mistaken diagnosis.—*Lancet*, May 19, 1888.

HYPODERMIC INJECTIONS OF CALOMEL IN SYPHILIS. DR. NIKOLAI N. RÜSANOFF, of Novokhopersk, having employed Scarenzio-Smirnoff's method in a great number of cases of syphilis, has come to the following conclusions: 1. The method is very convenient, not only in the hospital practice, but also in out-door patients. 2. The best results are obtained in inveterated neglected forms of the disease. 3. Since a maximal effect is produced by the very first injection, the method may be usefully employed also as an auxiliary means for a differential diagnosis in doubtful cases. A single injection of calomel in a non syphilitic person is said to be entirely free of any injurious effects. Dr. Rüsanoff used to inject calomel in the dose of 3 grains every three or four weeks. —*Vratch*, No. 8, 1888.

THE
Journal of the American Medical Association.
PUBLISHED WEEKLY.

THE EDITOR OF THIS JOURNAL would be glad to receive any items of general interest in regard to local events, or matters that it is desirable to call to the attention of the profession. Letters written for publication or containing items of information should be accompanied by the writer's full name and address, although not necessarily to be published. All communications in regard to editorial work should be addressed to the Editor.

SUBSCRIPTION PRICE, INCLUDING POSTAGE.
PER ANNUM, IN ADVANCE.....$5.00
SINGLE COPIES.....10 CENTS.

Subscriptions may begin at any time. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made at the risk of the publishers, by forwarding in REGISTERED letters.

Address
JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 65 RANDOLPH STREET,
CHICAGO, ILLINOIS.

LONDON OFFICE, 57 AND 59 LUDGATE HILL.

SATURDAY, JUNE 23, 1888.

A NOVELTY IN HEPATIC SURGERY.

In the *American Journal of the Medical Sciences*, for June, DR. L. MCLANE TIFFANY, of Baltimore, records two cases, of abscess of the liver and stone in the gall-bladder, in which the important part of each operation was the shutting off of a portion of the liver by suture from the general cavity of the belly, so that treatment could be applied irrespective of the neighboring but not entirely investing peritoneal sac.

In the case of the abscess an incision 3 inches long was made just below, and parallel to, the right costal cartilages, and carried down to the peritoneum. When hæmorrhage was arrested the peritoneum was opened for a distance of 2 inches, and the liver, which was not adherent, was exposed. Slight traction on each lip of the wound caused the edges of the peritoneum to open widely, showing an oval area of liver surface, 1 by 2 inches. The peritoneum edge and liver surface were then sewed together by close continuous sutures with a fine needle and silk, by which the general cavity of the peritoneum was shut off from the wound, and the operator had a buttonhole of extraperitoneal liver at disposal for the operation, which was then completed.

The second case is particularly interesting from the fact that the gall-bladder was opened through the liver, since digital exploration failed to detect the gall bladder, and the intestines were adherent to the under surface of the liver and to the gall-bladder, which was felt through the intestines after the incision was sufficiently enlarged. In view of the success of the operation in the case of abscess, the operation was done as follows: A slender hollow needle was passed directly through the liver from above downward into the gall-bladder, and on aspirating a perfectly clear fluid entered the syringe. It was thought that if adhesions prevented the gall-bladder from projecting beyond the liver edge the same would prevent extravasations into the peritoneal cavity; so the parietal peritoneum was sewed to the upper surface of the liver, making a "buttonhole" 1.5x2 inches, the rest of the peritoneal incision being also closed, and with the needle, which remained *in situ*, as a guide, the gall-bladder was reached by cutting through the thickness of the liver, the incision being of such a size that the operator's fingers would fill it. The gush of blood that followed the use of the knife was arrested by the forefinger thrust into the wound. The finger was not removed for three minutes, and no hæmorrhage followed its removal. Several stones were detected by the end of the finger, and were removed with the forceps. A rubber drainage tube was left in the gall-bladder, and in one month from the time of operation there was perfect union of the wound.

Dr. Tiffany's cases show two things: that hæmorrhage from a wound of the liver is not the surgical *bête noir* it has been supposed to be, and that it is amenable to pressure applied directly to the bleeding surface, as is shown by the case of stab-wound of the liver treated successfully by Burckhardt, described in THE JOURNAL, Vol. viii, p. 323, and Vol. ix, p. 62, in which the furious hæmorrhage was arrested by a tampon of iodoform gauze. The cases show, in the second place, that by shutting off an area of the liver from the peritoneal cavity there is a distinct gain for purposes of drainage, and lessened risk of septic infection. One of the chief advantages of the method, as can be readily seen, is the rapidity with which it can be performed, so that it is readily applicable in cases of stab or gunshot wound of the liver, in which a more tedious method would be out of the question.

DR. TURNBULL'S TREATMENT OF ACUTE AND CHRONIC OTORRHŒA.

In THE JOURNAL of June 9, 1888, DR. LAWRENCE TURNBULL assigns a high value to inflation of the Eustachian tube as a means of treatment in suitable cases, but principally of catarrh with perforation. It often proves very dangerous in unskilled hands in "otorrhœa" on account of its effects on the circulation, local effects of an excessive pressure, and also the blowing back of purulent secretions from the nose and pharynx into the ear. Before practicing inflation, the nostrils should be cleansed thoroughly.

The patients, especially children, should be taught to keep the nostrils clean. Many children do not know how to blow the nose. The discharge of purulent matters from the ear into the pharynx, setting up secondary troubles, is not a matter of theory with Dr. Turnbull, but is proved by observation. A very distressing case of bilateral perforation came under Dr. Turnbull's notice in which hæmoptysis and gastric hæmorrhage had been diagnosticated from the vomiting of bloody discharges which he describes as having been swallowed from the ear, via Eustachian tubes. At the post-mortem examination, the stomach contained a pint of putrid and bloody matter.

Dr. Turnbull does not approve of syringing, as a rule, and says it should never be done except by the physician. In the first place, a good syringe is a rarity, and an expensive rarity. Even if the instrument is good, in improper hands it may tear the membrane. He claims to have seen such accidents occur, to the entire destruction of the membrana tympani.

THE MALADY OF THE EMPEROR FREDERICK III.

According to the cabled reports of last Monday, the disease of which Frederick III died was cancer of the larynx. The autopsy proved that the larynx was completely destroyed by cancer, and that purulent bronchitis existed. There was also inflammation of the finer ramifications of the bronchial tubes into which purulent particles had entered. The whole larynx was in a state of suppuration, and presented a soft lumpy mass, with scarcely any trace of cartilaginous structure remaining. There was nothing to show the existence of perforation of the walls separating the trachea and œsophagus. The choking sensation from which the Emperor suffered during the last of his life, which was attributed to such a perforation, appears to have been really due to collapse of the larynx, owing to the destruction of the cartilage. The direct cause of death is given as paralysis of the lungs, according to the cable reports.

Dr. Mackenzie, in his report on Emperor Frederick's case, says: "In my opinion the disease from which the Emperor died was cancer. The morbid process probably commenced in the deepest tissues of the cartilaginous structures of the larynx and they became affected at a very early date. The small growth which was present when I first made an examination was removed by me by several operations, and all the portions removed were submitted to Professor Virchow. He was unable to detect any evidences of the existence of cancer. The examinations made in the beginning of March by Professor Waldeyer led to the belief that cancer was then present. Whether the disease was originally cancerous, or assumed a malignant character some months after its first appearance, it is impossible to state. The fact that perichondritis and carysis of the cartilages played an active and important part in the development of the disease doubtless largely contributed to make it impossible to form a decided opinion as to its nature till quite a recent date."

To Dr. Mackenzie's report Dr. Hovell adds the following: "In so far as my observations since last August permit me to form an opinion, I concur entirely in Dr. Mackenzie's view."

MICHIGAN STATE MEDICAL SOCIETY.

The programme of the twenty-third annual meeting of this Society was not only elegant in its appearance, but admirable in the arrangement of the work of the Society. The general meetings for transacting the business of the Society were to be held in the morning, and the reading and discussion of papers occupied the afternoons in three Sections—Practice of Medicine, Surgery, and Obstetrics and Gynecology. Each Section was provided with a full complement of papers on important subjects, and by this plan more than three times as much work would be accomplished as could be done if all were attempted in general sessions, as is done by nearly all our State Medical Societies. The annual meeting was recently held in Detroit and proved highly satisfactory to the members in attendance. If all our larger city and County Medical Societies would provide for having their scientific and practical work done in Sections, each holding meetings as often as the amount of work might require, while the general meetings for business and social purposes might be only annual or semi-annual; and if all the State Societies were made up of delegates from the local societies and would follow the example of the Michigan Society, the whole system of medical organizations would be in harmony with that of the American Medical Association, and afford the devotees of every legitimate specialty ample opportunity to cultivate their own field in harmony and affiliation with every other, and thereby preserve the unity and social integrity of the whole profession.

TRANSACTIONS OF THE NINTH INTERNATIONAL MEDICAL CONGRESS.

To answer several inquiries it is proper to state

that three large volumes of the Transactions are through the press and the fourth is well advanced. But a fifth will be required to complete the publication. The work is progressing as rapidly as is consistent with good quality of work, and with a fair prospect of completion within the next two months. All inquiries regarding the volumes already published should be addressed to John B. Hamilton, M.D., late Secretary-General, and Chairman of the Publication Committee, Washington, D. C.

EDITORIAL NOTES.

AN ASSOCIATION OF SANITARY INSPECTORS is one of the new organizations of Great Britain. There is a national association, with sub-associations. One of the provincial associations, says the *Sanitary News*, at a meeting held in Liverpool lately, passed resolutions to the following effect: "That the interests of the public health demand that all candidates for the position of sanitary inspector shall be duly qualified and certified by examination held under and directed by authority of the Government; that fixity of tenure be assured during good behavior; that the minimum scale of salary for sanitary inspectors be fixed by the Local Government Board; that one simplified Public Health Act, applicable to the whole kingdom, embodying these amongst other changes is necessary for the efficient discharge of the duties affecting the public health which devolve upon the sanitary inspectors."

THE SALE OF UNWHOLESOME FRUIT.—It is at this season of the year that the health of city dwellers, and especially of the young, is endangered by unripe or over-ripe fruit. Those most endangered are the children of the poor, and the wandering waifs of the streets, since over-ripe and even partly decayed fruit is exposed for sale at "cut prices" by the dealers. This is being done now in Chicago, and probably in other cities, and city health authorities would do well to put a stop to the practice at the beginning of the hot weather. In Chicago the fruit-stands and street-venders do no small business in over-ripe and partly decayed bananas, which, when purchased by a small boy is a double engine of destruction, since the peel is usually deposited on the side walks before the boy begins to jeopardize his own health by eating the fruit.

THE CHICAGO GARBAGE CREMATORY is doing satisfactory work, and a careful record is kept of the proportion of fuel consumed to the amount of material burned.

GLASS DRAINS AND PIPES for the plumbing of houses have been recommended by a Chicago architect, chiefly from the fact that the material is not acted upon by the agents that usually corrode pipes of other material, and is safe from the attacks of rats.

THE "CANADA MEDICAL AND SURGICAL JOURNAL" will soon appear as the *Montreal Medical Journal.*

A TRAINING SCHOOL FOR COLORED NURSES is connected with the Spellnan Seminary, Ga.

SOCIETY PROCEEDINGS.

GERMAN MEDICAL SOCIETY OF PHILADELPHIA.

Meeting of May 14, 1888.

VICE-PRESIDENT LAWRENCE WOLFF IN THE CHAIR.

DR. CARL SEILER read a paper on

HYPERTROPHY OF THE TONSILS.

He said that as yet we did not know whether the tonsils performed any physiological function or not, but that the view was prevalent that these organs were residuary and of no use in the economy. He stated further that in the normal condition they were invisible and became visible only by a hypertrophy of their tissue. This view had lately been forcibly expressed by Dr. Daly, of Pittsburgh, and found a proof in the fact that even when slightly hypertrophied in youth they usually disappeared at the age of 25 or 30 years. They had no connection whatsoever with the genito-urinary apparatus, as had recently been asserted.

After briefly describing the minute anatomy of the tonsil, he entered upon the subject proper, and said that we could recognize three distinct varieties of hypertrophied tonsils: first, the ordinary soft hypertrophied tonsil most commonly met with in childhood and early youth, and rarely found in adult age. This variety is characterized by simple enlargement of the tonsillar tissue, with a corresponding increase in the size of the crypts, which latter mostly contain plugs of white, cheesy secretion. This secretion in some cases becomes putrid and emits an extremely disagreeable odor. This simple hypertrophied tonsil is frequently the seat of periodical acute inflammation, which may or may not produce parenchymatous suppuration. Coexisting with this chronic tonsillar hypertrophy we usually find a chronic naso-pharyngeal catarrh and more or less hypertrophy of the pharyngeal tonsil. These conditions give rise to a variety of symptoms, the most prominent of which are interference with proper vocalization and articulation, insufficient æration of the blood, gastric disturbances and frequently catarrh of the middle ear.

The second variety is the so-called scirrhous tonsil first mentioned by Dr. Jarvis, of New York, which is characterized by a smooth exterior surface and a

hard, cartilaginous feel to the touch of the finger or probe. The crypts are usually not enlarged, and if so, rarely contain the cheesy secretion. This variety of hypertrophied tonsil is met with usually in young adults, and is rarely, if ever, the seat of acute periodical inflammation. The hardness is imparted to it by a deposit of connective tissue between the cellular elements, and particularly around the blood-vessels, canaliculizing them, and thus depriving them of their contractility. They interfere by their presence with vocalization and articulation, and naso-pharyngeal catarrh as well as chronic laryngeal inflammation, frequently coexist with them.

The third variety may be called the ragged hypertrophied tonsil, and is nothing but the result of the first variety having been the seat of frequent tonsillar abscesses which have caused parts of the tissue to slough away, leaving a ragged mass of tonsillar tissue between the faucial pillars. It is usually found in young strumous adults and is perhaps the most dangerous to the general health, inasmuch as it gives lodgment to septic material and thus in many cases produces chronic septicæmia.

Dr. Seiler then entered into the consideration of the treatment of hypertrophied tonsils, and said that in all cases the offending masses should be removed, but that the method by which this was to be accomplished should be carefully considered and adapted to the requirements of each individual case. All chemical caustics applied to the surface of the tonsil were worse than useless, as their application gave rise to a great deal of pain and had to be kept up for a considerable length of time to produce any results at all. In the ordinary soft variety the tonsil was best removed by ablation with the tonsillotome. Care should, however, be taken not to wound the edge of the anterior pillar, because a small branch of the tonsillar artery runs close to this edge and when cut gives rise to hæmorrhage difficult to control. If the anterior pillar is adherent to the tonsil, it should be loosened, and if this is not possible owing to the bands of fibrous tissue connecting the pillar with the tonsil being too strong to be torn, the tonsillotome cannot be used with any degree of safety and the galvano-cautery knife should be used. After the projecting portion of the tonsil had been ablated, the cut surface should be brushed over with a 60 grain solution of nitrate of silver to cause contraction of the capillaries and to cover the wound; and any secondary hæmorrhage, which, however, rarely occurred, should be controlled with a strong solution of tannic and gallic acid used as a gargle. The old method of removing the tonsils with the volcellum and bistoury the lecturer said was unsafe, as the edge of the anterior pillar, even when not adherent, was too easily wounded by the heel of the knife. Total extirpation or enucleation was also dangerous, besides being unnecessary except in the extremely rare cases of cancerous growth in the tonsil.

The safest and only applicable one in cases of ragged tonsil was the galvano-caustic method of removing hypertrophied tonsils. In applying this method the galvano-cautery knife should be heated to a bright red heat, and should then be pressed into the tissue of the tonsil by entering one of the crypts and cutting with it from within outward, so that the eschar resulting from the burn can easily fall off and does not become impacted in the tissue of the tonsil. This procedure Dr. Seiler said did not give rise to any pain, and should be repeated at intervals of a week or ten days, and from four to six applications usually sufficed to reduce the tonsils to a size compatible with health and comfort of the patient. Under no circumstances should any preparation for the removal or reduction of hypertrophied tonsils be undertaken while the organ was in a state of acute inflammation. In the case of the ragged tonsil, scraping the tonsillar tissue from the capsule with a sharp curette had been recommended, but this method was not only very bloody, but also painful, and on that account the galvano-cautery was to be preferred.

For the removal of the scirrhous tonsil, Dr. Seiler recommended the Jarvis snare as the best and safest instrument. The steel wire loop should be laid around the enlarged tonsil and by turning the screw should be gradually decreased in size until the portion encircled by the wire was cut off. If done slowly the operation occasioned very little pain and time was given for the edges of the rigid vessels to become agglutinated so that little or no hæmorrhage resulted. The best way, he said, was to start the snaring process and then let the patient turn the screw himself, trusting to him that it was not done too quickly; for the patient would tighten the loop until he felt the pain and would then stop, to begin again when the pain had ceased. The time occupied in thus removing a scirrhous tonsil was from two to three hours.

DR. MUERLECK suggested that many of the supposed cases of hæmophilia were cases of scirrhous tonsil, in which the canaliculization of the vessels caused profuse and persistent hæmorrhage after ablation. For this reason he asked the lecturer to definitely state the diagnostic differentiation between the soft and fibrous forms.

DR. VANSANT desired the judgment of Dr. Seiler upon the use of alkalies in acute tonsillitis—especially of sodium bicarbonate and borax. He inquired furthermore, whether, after repeated attacks of inflammation, the resulting hypertrophy ever spontaneously disappears. In the matter of diagnosis, it should be borne in mind that other tissue changes than simple inflammation and hypertrophy may have their seat in the tonsils. It is a question whether the initial lesion of syphilis would be likely to lead to such error. The cases he had observed presented a mere superficial ulceration without induration. In none of the cases reported by Tchisbriakoff, Peterson, Tomasheosky and Seveki within the past year, was the fact of induration mentioned. He would like to know whether this peculiarity is constant in a lesion in this location.

DR. WOLF had had considerable success in aborting acute tonsilitis by Dr. Seiler's method, viz., by penciling with a 25 per cent. solution of silver nitrate. The attacks were, however, aborted only when the application was made within the first twenty-four hours. Nevertheless even a later appli-

cation was generally successful in preventing suppuration—besides giving great comfort to the patient by reducing the tension and pain.

DR. FRIEBIS noted the frequent association of tonsillar hypertrophy and otitis media, but was not clear in his mind whether the same is to be attributed to impeded nasal respiration (mouth breathing), or to the septic influences from the crypts, or to mechanical obstruction of the mouth of the Eustachian tube by the swollen gland. Dr. Miller, in using the cautery knife, had frequently had it stick in the tonsilar tissue and had caused pain and hæmorrhage by its violent removal. This difficulty was due to a too early shutting off of the current and could easily be avoided. The knife should be hot when applied and removed. He had used the galvano-cautery more often than the guillotine—even in the soft variety—owing to an unconquerable prejudice on the part of the patients against any cutting operation. For the same reason the blade must be heated after it is in the mouth, so that the patient may not see it. If both tonsils were treated at one sitting, deglutition would be rendered unnecessary painful. He treats them, therefore, in alternation, with two sittings per week. He reduces them so that they do not project beyond the pillars and leaves the rest to cicatricial contraction. A most useful battery for the purpose is that of Dr. Seiler. The method of gouging out the growth with the finger is not only barbarous but dangerous. He would not agree with the lecturer that the tonsils are necessarily in a pathological state when they fill the space between the anterior and posterior pillars, and do not extend beyond them.

DR. WEED quoted the two cases reported by Croly of primary sarcoma of the tonsil, in both of which incisions were made to evacuate the supposed abscess. Such an affection might be mistaken for a hypertrophy even more easily than for quinsy, and the guillotine might evoke a dangerous hæmorrhage. In cases of acute tonsilitis the diagnosis is rendered difficult by the fact that a variety of affections have here their local manifestations. Le Gendre considers the tonsil the site of the initial lesions of scarlatina and diphtheria, and Fraenkel calls attention to other varieties of septic infection from this gland. Le Brun looks upon all tonsilitis as infectious and regulates his therapeusis accordingly. On the other hand, Froelich reports a group of cases in some of which the tonsil seems to have been the seat of local lesion, although not the point of original inoculation. The first case was one of so-called follicular tonsilitis followed by a fatal suppurative peritonitis. At the autopsy Froelich and his assistant sustained slight wounds with a resulting follicular tonsilitis. A number of the household developed similar symptoms. In addition to the cases quoted by Dr. Vansant of syphilitic inoculation, are a number collected by Dr. Delavan in the Annual of the Universal Medical Sciences, just published. There being therefore so many varieties of acute tonsilar inflammation, it is idle to vaunt any one remedy as being suited to all cases. The strong solution of nitrate of silver had in the speaker's hands seemed to abort the attacks of recurrent quinsy, or had at least modified the process, but had failed in other forms of inflammation. He was unable to state whether the virtue of the silver salt was in its astringency or in its germicide power. In tonsilotomy for hypertrophy it is, according to the experiments of Zuckerhandl, impossible to wound the internal carotid without cutting the wall of the pharynx.

DR. SEILER, in closing the discussion, said that the differentiation between the soft and scirrhous varieties of hypertrophy was easily made by the sense of touch, the former being soft and doughy, while the latter was hard and cartilaginous, and never occurs before the age of puberty. He believed that an initial lesion of syphilis upon the tonsil was never indurated. This was owing to a poverty of submucous connective tissue. An early diagnostic sign is glandular involvement at the angle of the jaws. The much-vaunted alkaline treatment of acute tonsillitis with bicarbonate of soda or borax had in his experience given no results greater than a temporary alleviation of the pain. The only abortive treatment with which he had had success was that mentioned by Dr. Wolff. There is no doubt that hypertrophy of the tonsil does sometimes disappear with the advancing age of the patient. This is due to a physiological atrophy of the glands. The periodical attacks of acute inflammation may be prevented by a proper tonic treatment, attention to hygiene, and particularly by ablutions of the neck and chest morning and night.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Held at Philadelphia, June 5, 6, 7 and 8, 1888.

TUESDAY, JUNE 5—FIRST DAY.

The thirty-ninth annual meeting of the Medical Society of the State of Pennsylvania was called to order by THE PRESIDENT, DR. R. J. LEVIS, of Philadelphia, on June 5.

Prayer was offered by the Rt. Rev. O. W. Whitaker, D.D., Bishop of Eastern Pennsylvania.

The *Address of Welcome* was delivered by Dr. John H. Packard.

After reports of officers and committees had been received and other routine business transacted, the following amendments were adopted:

"That the censors of the appropriate district or districts shall have power to determine whether a resident of one county shall be entitled to become a member of an adjacent County Society, which may be more convenient for him to attend."

"The Committee on Pharmacy shall consist of five members, to be appointed annually by the President, whose duty it shall be to consider all matters pertaining to pharmacy, and who shall be empowered to represent this Society in conference with a similar committee to be appointed by the Pennsylvania Pharmaceutical Association. They shall report annually the result of their joint labors."

Dr. Edward Jackson, from the Committee on Medical Education, offered the following resolution, action on which was postponed until Wednesday:

Resolved, That a committee of five be appointed by the President to secure the coöperation of County Medical Societies and individuals interested in the subject, to urge upon the State Legislature the enactment of a law essentially identical with that proposed by this Society and favorably reported to the House of Representatives at the last session of the Legislature.

AFTERNOON SESSION.

The first business was the

ADDRESS IN HYGIENE,

by DR. TRAILL GREEN, of Easton.

He referred to the great importance of pure air and the necessity of providing adequate ventilation in public and private buildings. The importance of bathing was also alluded to, and the necessity of keeping cellars perfectly clean was insisted upon. The fear of suffering in the hour of death was then considered, the speaker holding that this fear was rarely realized. Even in true croup death is accompanied by stupor which prevents suffering. In regard to the fear of the possibility of being interred before life has become extinct, the author stated that a careful investigation had shown that there was not a well authenticated case in which this had occurred.

The dread of being eaten up by worms after burial was referred to. An inquiry made among those whose business is connected with cemeteries, etc., shows that worms are never seen in bodies buried in the ground. Worms are never seen more than one foot below the surface.

DR. EDWARD R. MAYER, of Wilkesbarre, then delivered the

ADDRESS IN MEDICINE.

The main portion of the address was devoted to a consideration of intra-corporeal antisepsis, to which the author attached considerable value. He had for a quarter of a century employed the sulphites. He had employed these apparently with success as prophylactics in scarlet fever, measles, diphtheria and pertussis. Gastric and intestinal antisepsis have proved of service in gastro-intestinal affections. The value of antipyretics and analgesics was then briefly referred to.

Dr. Hugh Hamilton, of Harrisburg, read a paper entitled *The Chemical Factor in Disease*.

DR. WILLIAM PEPPER then read

A CONTRIBUTION TO THE CLINICAL STUDY OF ALBUMINURIA.

The paper was based on the records of the chemical study of the urine in the cases occurring in his private practice during the past eight months. The examinations had been made by Dr. J. P. Crozier Griffith. The total number of cases was 239. Of this number albumen was not found in 96 cases. The number in which albumen was found, continuously or at some period, was 143. As a rule, the test employed was that of Heller. It is therefore evident, he said, that there must be some forms of albuminuria not significant of organic disease of the kidneys. In 80 of the cases in which albumen was found, its presence was capable of explanation from the presence of pus or blood. In many cases, however, it was difficult to decide that the quantity of blood, pus, or other accidental addition to the urine was sufficient to explain the amount of albumen found. In 41 cases the presence of albumen could not be explained in this way, but yet in none of these could casts be found, although looked for with great care. In only 22 cases of the 143 were casts found.

DR. FRANK WOODBURY, of Philadelphia, read a paper on

THE EFFERVESCENT FORM FOR THE ADMINISTRATION OF CERTAIN REMEDIES.

Attention was called to the fact that the last Pharmacopœia contained only two preparations intended to be administered in effervescent form. These are liquor magnesii citratis and magnesii citratis granulatis. Sparkling wines and malt liquors owe most of their palatability to the excess of acid which they contain. Modern works on therapeutics say very little with reference to the action of carbonic acid gas as a medicinal agent. It plays as important a part in the animal as in the vegetable economy. Effervescing preparations were much employed by practitioners of a generation ago. The effervescing form of medication affords a valuable means of administering nauseous and disagreeable medicines. Small quantities of alcohol are much more stimulating when given in the effervescent form than in the shape of spirits. Malt liquor is, when properly given, a better hypnotic than bromide of potassium. It is useful in gastralgia or nausea, and in renal colic. It has been found useful as a food and stimulant in children suffering with diphtheria. Effervescing draughts are useful in fevers, being grateful to the patient and tending to reduce the temperature and favor the action of the skin. In local affections of the digestive tract these agents are commonly resorted to. In true migraine they may be given with the addition of a small quantity of deodorized tincture of opium.

The author concluded the paper with the hope that the next committee of revision of the Pharmacopœia might be induced to extend the list of granular effervescent salts and, if possible, establish uniform and standard formulæ for the carbonated and other mineral waters, both natural and artificial, that are now so largely used by the profession and the public.

WEDNESDAY, JUNE 6—SECOND DAY.

THE PRESIDENT, DR. R. J. LEVIS, then delivered the *President's Address:*

THE TRADITIONAL ERRORS OF SURGERY.

Prejudice has done more to perpetuate error than any other cause. American text-books have now reached such a high position that it is necessary to rely to but a slight extent on foreign authorship, yet an examination of the announcements of seventy-two regular medical colleges shows that, while 186 books of foreign authorship are recommended, only 157 American works are advised. Reference was made

to want of thoroughness in the teaching of practical anatomy, largely the result of tradition.

Very few great advances have been made in medicine without being subjected to the opposition of prejudice. No sadder instance of traditional prejudice can be found than that shown by the opposition and long probationary trial of ovariotomy. The tardy recognition of the importance of antiseptic surgery is a discredit of the time, nearly 30 years having elapsed since its introduction by Lister. The tendency to the complication of surgical instruments and apparatus was next considered. An instrument is rarely made straight if it is possible to make it crooked.

Other traditional errors referred to were delay in the operative treatment of depressed fractures of the skull until symptoms appear; delay in the operative treatment of strangulated hernia until inflammation has appeared; the failure to recognize the distinctly local origin of certain malignant growths and the possibility of their eradication by thorough operation; ignorance of the fact that the tourniquet may well be discarded in favor of the use of the elastic bandage; the reliance on styptics to the disregard of more efficient means of checking hæmorrhage.

Dr. A. Lowry Sibbet, of Carlisle, Pa., then read *A Brief Review of the Decisions of the Courts concerning the Registration Act of 1881.*

Dr. John H. Packard made some remarks on

THE PROPOSED STATE BOARD OF MEDICAL EXAMINERS.

The speaker stated that there existed a committee of this Society charged with perfecting a plan and urging the establishment of a State Board of Medical Examiners. He had grave doubts of the expediency of this, and criticised the provisions of the proposed bill. Objection was made to the provision for a mixed board of regular and irregular practitioners. The proposed bill says that no one shall be excluded or rejected because of his or her adhesion to special system. This was clearly in opposition to the Code of Ethics of the American Medical Association.

Dr. L. F. Flick, of Philadelphia, then read a paper on

THE CONTAGIOUSNESS OF PHTHISIS.

It was held that phthisis was contagious, and the evidence bearing upon this view was offered in detail, and the objections urged to this idea were considered.

Dr. Given stated that he had had fifteen years' experience as physician to various Indian agencies in the Southwest. Very little reliance was to be placed upon published statistics. He had found that among the most degraded tribes of Indians phthisis was quite common, but as they became more civilized the disease decreased, and among those who had some white blood it was at its minimum.

Dr. Early, of Fayette Co., in a practice of forty-three years, had never seen any evidence of the contagiousness of phthisis.

Dr. Thomas J. Mays, of Philadelphia, held that the evidence advanced by Dr. Flick was not sufficient to prove the contagiousness of the disease.

Dr. E. T. Bruen, of Philadelphia, thought that investigations on this subject showed that there was increasing evidence of the strict inoculability of tuberculosis.

Afternoon Session.

REPORT OF NOMINATING COMMITTEE.

President—J. B. Murdock, Allegheny.

Vice-Presidents—L. H. Taylor, Luzerne; Benj. Lee, Philadelphia; W. W. Dale, Cumberland Co.; W. S. Rowland, York Co.

Permanent Secretary—Wm. B. Atkinson, Philadelphia.

Recording Secretary—Charles W. Dulles, Philadelphia.

Corresponding Secretary—J. H. Musser, Philadelphia.

Treasurer—O. H. Allis, Philadelphia.

Committee on Publication—Drs. Edward Jackson, G. W. Guthrie, S. H. Gamp.

Dr. Theophilus Parvin, of Philadelphia, then delivered the

ADDRESS IN OBSTETRICS.

The first portion of the address was devoted to consideration of the recent advances made in the use of electricity in obstetrics and diseases of women. Electricity in the induction of premature labor has been recommended, but has only a limited value and usually must be supplemented by other means to secure full dilation. Electricity has been used with success for the destruction of the living fœtus in extra-uterine pregnancy. So far no unfavorable result has followed the use of the faradic current. Such favorable results have not followed the use of the galvanic current. The day is, however, coming when extra-uterine pregnancy will be treated by abdominal section as soon as recognized.

The faradic and galvanic currents have also been found of great service in the treatment of pelvic cellulitis and fibroid tumors.

The suggestions made with reference to the treatment of placenta prævia were spoken of. The author concluded that the proper plan was to pursue expectant measures when there is no severe hæmorrhage. If there is serious bleeding premature labor should be at once induced. If hæmorrhage occurs after the viability of the child, labor should at once be brought on. Probably the best method is to use Barnes' hydrostatic dilators with detachment of the placenta as recommended by Barnes.

The use of antiseptics in midwifery was insisted upon. Reference was also made to the results obtained by the improved Cæsarean operation. The paper closed with an earnest protest against the indiscriminate performance of operations for the removal of the ovaries.

Dr. Joseph Price and Dr. C. F. Penrose repeated the experiments of Dr. N. Senn showing the use of

RECTAL INJECTION OF HYDROGEN GAS AS AN INDICATION OF INTESTINAL WOUNDS.

Experiment 1.—A dog was etherized, and the gas injected in the rectum was ignited at the end of a tube inserted into the œsophagus.

Experiment 2.—A stab wound was made in the upper portion of the small bowel. The gas appeared at the abdominal wound and was ignited at the end of a tube inserted into the opening.

Experiment 3.—A gunshot wound was made and its existence demonstrated in the same way.

DR. M. PRICE, of Philadelphia, reported a successful case of

REMOVAL OF THE RIGHT KIDNEY FOR PISTOL-SHOT WOUND,

in a girl of 14 years. The ball also passed through the right lobe of the liver, and the convalescence was complicated by numerous abscesses in the track of this wound.

DR. JOHN B. DEAVER, of Philadelphia, read a paper on

NEPHRECTOMY FOR MORBID GROWTHS.

After referring to the forms of morbid growths which involve the kidney, and to the history of the operation, he described a case in which nephrectomy was performed for a tumor of the kidney which proved to be a carcinoma of the medullary type. The kidney was 8 inches in length and 5 inches transversely. The patient died twenty-four hours after operation from shock. The following conclusions were presented:

1. Sarcoma in children should not be subjected to operation.
2. Sarcoma in adults should be operated on.
3. Carcinoma in adults, unless seen early by the surgeon, contraindicates operation.
4. Malignant growths, in the majority of cases, should be removed by abdominal section.
5. Benign growths of the kidney are cases for lumbar operation. If too large to be removed entire, they should be removed by sections, the pedicle being first ligated.

Dr. J. H. Musser, of Philadelphia, read a memorandum of the *Life and Character of Benjamin Rush.*

DR. WM. F. WAUGH, of Philadelphia, then read a paper on

THE SPECIFIC TREATMENT OF TYPHOID FEVER.

The speaker had used, since 1881, in the treatment of typhoid fever, the benzoate of ammonium and of sodium as first recommended by Klebs. He had continued these remedies until nine months ago, and he thought that they had been of benefit. During 1887 he had used the sulpho carbolate of zinc in the treatment of summer complaint in children. The different forms of disease classed under this head are almost certainly due to a specific microbe. Two grain doses were readily given to children in their second year. The use of this remedy was followed by marked success. This experience led him to employ the sulpho-carbolate of zinc in the treatment of typhoid fever. Twelve cases only had been treated. Three cases were diagnosed by two or more physicians as incipient typhoid. In these the symptoms promptly disappeared under treatment, so that there is doubt as to the diagnosis. The diagnosis in the remaining nine cases was undoubted. One of the cases, admitted in the third week after repeated hæmorrhage, died. The others recovered. The administration of the drug was followed by relief of gastric disturbance, disappearance of fetor from the stools, amelioration or disappearance of diarrhœa, cessation of hæmorrhage, lessening of tympany and reduction of temperature two or three degrees.

DR. T. D. DUNN, of West Chester, read a paper on

THE HYPODERMIC USE OF HYDROCHLORATE OF COCAINE IN MIGRAINE AND SPASMODIC ASTHMA.

The speaker had used this drug in his own person and in the case of others in the treatment of sick headache with satisfactory results. He had used it in doses of one-half to three-fourths of a grain. In spasmodic asthma, combined with one-twelfth to one-eighth grain of morphia the results had been immediate and satisfactory, and unattended with the nausea usually produced by morphia.

In the discussion which followed attention was called to the dangers attending the hypodermic use of cocaine.

DR. E. A. WOOD, of Pittsburgh, read a paper on

ARTIFICIAL DIGESTION AND ARTIFICIAL PEPSIN,

protesting against the routine employment of artificial pepsin in all cases of dyspepsia without reference to the cause of the indigestion or to the seat of the process. Pepsin was useful in only certain definite forms of dyspepsia.

(*To be concluded.*)

DOMESTIC CORRESPONDENCE

THE RELATIONS OF THE JOURNAL TO ILLINOIS AND CHICAGO.

A Letter to the Editor of the Philadelphia Medical and Surgical Reporter.

Dear Sir:—In a recent issue of the *Medical and Surgical Reporter* you say:

"I hear a great deal of complaint that THE JOURNAL is not what it was intended to be, namely: a substitute for the volume of Transactions. Men complain that the proceedings of the Association are not properly reported in THE JOURNAL, and that the papers are not published in regular order or according to any well arranged plan. They say here[1] that it is too much filled with the proceedings of the Chicago and Illinois societies, and that papers read at the meeting are pushed aside to make room for papers which have not been presented to the Association at all, and which were written long after the ones which they have displaced."

As a member of the American Medical Association you have an unquestionable right to criticize THE JOURNAL. Courtesy to THE JOURNAL and to the members of the Association demand, however, that such criticisms should be made *first* directly to the members of the Association through the pages of THE JOURNAL, and not in another paper unless your communication is refused space by the Editor of THE JOURNAL. Something more than courtesy demands that your criticisms, wherever they may be published, be founded on fact, and that, even if they

[1] In Cincinnati.

be unfriendly, they be just and not misleading. While acknowledging your right to criticize, I claim the same right to investigate the grounds of your criticism, and in the proper place—the pages of THE JOURNAL.

I was in Cincinnati at the meeting of the Association, but heard no such complaints as those you mention. Possibly my facilities for hearing are inferior to those of some others, but I heard the opinions of a large number of members in regard to THE JOURNAL. I certainly did not hear any complaint "that THE JOURNAL is not what it was intended to be, namely, a substitute for the volume of transactions." As I understand it, THE JOURNAL was intended to more than substitute the volume of *Transactions*. Nor did I hear any complaint that THE JOURNAL is too much filled with the proceedings of Chicago and Illinois societies.

Now let us see by an examination of the departments of Volume IX, July–December, 1887, of THE JOURNAL, whether your criticisms are fair and just. I take several departments so as to show that your criticisms not only do not apply to the proceedings of Chicago and Illinois societies, but do not apply to any one of four departments of THE JOURNAL.

ORIGINAL ARTICLES—VOLUNTARY.

	No.	Per cent. to total.	No. pages.	Per cent. to total.
Illinois	13	23.21	39.45	28.45
D. C.	9	16.07	18.2	13.16
Indiana	7	12.5	9.75	7.01
Germany	6	10.71	21.79	15.67
Pennsylvania	4	7.14	11.6	8.34
Virginia	3	5.35	7.55	5.43
Michigan	3	5.35	5.65	4.06
Louisiana	2	3.57	2.8	2.01
9 States[1]	1 each	1.78	2.51 (average)	1.8 (average)

From this it is seen that Illinois furnished only *four* more voluntary original articles than the District of Columbia.

In taking account of the Association papers published in Vol. IX it must be remembered that these papers were read at the meeting in Chicago, and it would be only natural that Chicago and Illinois would furnish a larger proportion of these papers, than they would at more distant meetings.

ASSOCIATION PAPERS.

	Papers.	Pages.
Illinois	17	41.65
New York	10	48.75
Pennsylvania	9	16.45
Michigan	6	23.7
Missouri	4	14.25
Indiana	4	11
Kentucky	3	10.75
Massachusetts	3	8.7
Minnesota	3	8.2
Tennessee	3	8.45
Maryland	2	16.5
Kansas	2	3
Iowa	2	4
8 other States[2]	1 each	25
District of Columbia	1	4.75

From this table it is seen that while Illinois furnished more papers than any other State, it furnished fewer pages than New York; and while the Illinois papers averaged 2.45 pages each article, the averages for New York, New Jersey, Rhode Island, Maryland and Massachusetts were above this.

Now let us compare local society reports correspondence, and miscellaneous items in Vol. IX.

LOCAL SOCIETY PROCEEDINGS.

Pennsylvania	31.52	per cent. of total.
Illinois	26	" "
District of Columbia	19.81	" "
Missouri	13.05	" "
Massachusetts	10.21	" "
Atlantic States	59.54	" "
Western "	39.05	" "

CORRESPONDENCE.

Foreign	57.5	per cent.
New York	20	"
Illinois	6.25	"
Indiana	5	"
District of Columbia	2.5	"
Iowa	2.5	"
Pennsylvania	2.5	"

NEWS AND MISCELLANY.

General	32	per cent.
Foreign	13	"
Illinois	10.9	"
Massachusetts	10.9	"
Michigan	8.7	"
New York	8.7	"
Pennsylvania	5.1	"
Ohio	2.1	"
Other States less than 2 per ct. each		
Eastern States	24.7	"
Western "	23.1	"

In Vol. IX were published a total of 256 items of original articles, society reports, and correspondence, as follows:

Domestic	214
Foreign	42

The distribution by large cities (American) was as follows:

Eastern.

1. New York	23 = 8.98	per cent.
2. Philadelphia	23 = 8.98	"
3. Washington	21 = 8.2	"
4. Boston	9 = 3.51	"
5. Pittsburgh	4 = 1.56	"
6. Baltimore	2 = 0.78	"
	82 = 32.01	"

An average of 13.66 each.

Western.

1. Chicago	47 = 18.35	per cent.
2. St. Louis	8 = 3.12	"
3. Indianapolis	5 = 1.95	"
	60 = 23.42	

Average 20 each.

TOTAL ITEMS—BY STATES.

Eastern[3]

1. Pennsylvania	30 = 11.71	per cent.
2. New York	28 = 10.93	"
3. Massachusetts	9 = 3.51	"
4. Virginia	5 = 1.95	"
	72 = 28.12	

(1 Colorado, Kansas, Kentucky, Massachusetts, Missouri, New Jersey, New York, Texas, Wisconsin.)

(2 California, Georgia, Arkansas, New Jersey, Louisiana, Ohio, Rhode Island, Wisconsin.)

(3 Excluding D. C., and 4 States giving less than 1 per cent.

Western[4]

1. Illinois	57	= 22.26	per cent.
2. Indiana	11	= 4.21	"
3. Michigan	11	= 4.21	"
4. Missouri	9	= 3.51	"
5. Iowa	7	= 2.73	"
6. Wisconsin	6	= 2.34	"
	101	= 39.45	

If to the four Eastern States we add the District of Columbia, as should be done, the total is 93, and the Eastern percentage increased to 36.32. But the table shows that 4 Eastern States have an average percentage of 7.03, as compared with the Western average of 6.57.

On summing up, then, we get the following page percentages:

Eastern States.

Original articles—voluntary	33	per cent.
" " —Association (7 States)	42.64	"
Society proceedings—(local)	59.54	"
Correspondence	25	"
News and Miscellany	27.5	"
Average,	37.53	"

Western States.

Original articles—voluntary	40	per cent.
" " —Association	44.22	"
Society proceedings (local)	39	"
Correspondence	14.11	"
News and Miscellany	23.08	"
Average,	32.22	"

Europe, 35 items, 13.67 per cent. of total.

Therefore, when we see the District of Columbia contributing almost as many voluntary original papers as Illinois, New York sending almost as many Association papers to the Chicago meeting, and giving 14 per cent. more correspondence than Illinois, Pennsylvania furnishing 6 per cent. more society reports, and Massachusetts as much news and miscellany, it appears—and is a fact—that your criticism was both unfair and unjust. Such is likely to be the case when one neglects to investigate the foundation for his notions before he publishes them.

In Vol X, up to the No. for June 2, 1888, I find 72 voluntary original articles (not Association articles). These arrange themselves as follows:

	No.	Pages.
Pennsylvania	17	55.7
Illinois	15	41.15
District of Columbia	12	34.7
Massachusetts	8	23.7
Missouri	6	11.5
Ohio	4	14.2
Iowa	3	6.9
New York	1	2.5
Indian Territory	1	2.9
Rhode Island	1	3.5
Syria	1	.5
Virginia	1	2
West Virginia	1	1.45
Wisconsin	1	1.9

	No.	Pages.
Or, *East* of Alleghanies	40	122.1
West of "	30	78.55

In Vol. X, up to June 2, are reports of 17 medical societies, covering 142 pages, as follows:

	Societies.	Pages.
Pennsylvania	5	46.4
Illinois	3	40.95
District of Columbia	1	21.5
Massachusetts	2	13.5
Missouri	1	13.9
Ohio	1	4.1
Maryland	3	9.45
California	1	12.3
	17	142.1

	No.	Pages.
Or, East of Alleghanies	11	90.85
West of "	6	51.25

142.1 pages gives an average of 8.35 pages for 17 societies.

The averages are as follows:

5 Pennsylvania societies	9 28 each.
3 Illinois "	13.65 "
3 Maryland "	3.15 "
2 Massachusetts "	6.75 "
1 Ohio Society	4.1 "
1 California "	12.3 "
1 Missouri "	13.9 "
1 District of Columbia Society	21.5 "

Thus it will be seen that the pages of THE JOURNAL are not so full of Chicago and Illinois as of Pennsylvania and Philadelphia society reports; and that the Chicago and Illinois societies stand third on the page-average list.

After all, is it not most natural that Chicago and Illinois should furnish a larger proportion of material to THE JOURNAL than any other city and State? Every journal, whether private property or owned by an Association, must depend upon its own city and State for a large proportion of its material. Is it to be supposed that THE JOURNAL would draw as much material from Boston or New York as from Chicago? There are great weekly papers published in those cities, much older than THE JOURNAL. Can THE JOURNAL hope to compete with your *Reporter* for Philadelphia and Pennsylvania material? If Illinois and Chicago writers send as good material as those of other States, should they be told that they must move into some other State so as to equalize matters?

You complain, practically, that the papers read before the Association are not published in a lump, and to the exclusion of voluntary papers. Suppose this was done; would not voluntary contributors cease sending material to THE JOURNAL, so that in a short time THE JOURNAL would exist for a few months in the year, and then become torpid until the next meeting of the Association? One of the impossibilities of this life is eating one's cake and having it.

You will probably admit that voluntary papers may be, and in many cases are, as valuable from a scientific standpoint as the papers contributed through the Sections of the Association. From a business point of view, then, would it be wise to reject good voluntary papers, which would go to other journals, and displease the authors to the extent that they would first cease contributing to THE JOURNAL, and then cease subscribing to it? Furthermore, THE JOURNAL would thus get the name of a "close corporation paper," run *solely* in the interest of the men that read papers at the meetings of the Association each year. Had THE JOURNAL been

[4] Excluding States that furnished less than 1 per cent.

begun on this principle it would have died in its early infancy. To begin on this principle now would kill it. I have no doubt that many who pretend to be friends of THE JOURNAL would rejoice to have it pursue this policy, and would attend its funeral with pleasure. But on the present policy a funeral is a contingency that need not be considered, as shown by the success of THE JOURNAL. If it had not found favor with the profession, and such as no other American journal has ever had, it would not have been necessary to enlarge it by 4 pages an issue last July, nor would it be necessary to add 4 more pages an issue after June, 1888.

Finally, do you not think that in case you make any future criticisms of THE JOURNAL it would be best: 1. To be sure of your ground, and not make statements at random. 2. To publish your criticisms in the proper place—THE JOURNAL—so that you may not unjustly prejudice those that do not read THE JOURNAL against it, and so that members of the Association may see your criticisms without stumbling upon them accidentally?

I remain, Very truly yours,

WM. G. EGGLESTON.

Chicago, June 11, 1888.

STATE MEDICINE.

NATIONAL MARINE PATROL.

The Secretary of the Treasury has issued the following circular, under the date of June 4, 1888:

In order to assist local authorities in the maintenance of quarantine against the introduction of infectious diseases, as provided in section 4792, Revised Statutes, the act of April 29, 1878, and appropriation acts authorizing the President to maintain quarantine at points of danger, the President has determined to establish, by means of the vessels of the Revenue Marine, a national patrol of the coast of the United States, so far as it may be practicable under existing law and consistent with the performance of the other duties confided to that Service.

You are accordingly directed to cruise, actively, with the revenue steamer ——, under your command, upon the outer lines of your cruising grounds, and to exercise special vigilance in speaking all vessels arriving from foreign ports, or from infected ports of the United States, directing your inquiries, first, as to the port from which the vessel sailed, and, secondly, as to health of those on board at the time of departure, during passage, and at the time of hailing; and should the information gained indicate a condition of contagion or infection in the vessel or crew, or that the vessel has left a port at which contagious or infectious diseases were prevailing, her master will be directed to proceed for examination to the outer quarantine station provided for her port of destination.

The following regulations will be observed relative to the inspection of vessels.

If a vessel be found with sickness on board, or in a foul condition, she will be directed to proceed to the quarantine station hereinbefore indicated, and the Revenue-Marine officer will immediately notify the proper quarantine officer. In such case no person will be permitted to board the vessel until the medical officers in charge of the quarantine shall have given the usual permit.

Should the pilot or master of a vessel, when hailed, report cases of recent or present sickness on board, the revenue officer will not board, but will send her immediately to quarantine,

Quarantine officers will be recognized as follows, viz:

Medical officers or acting assistant surgeons of the Marine Hospital Service in charge of Gulf, South Atlantic, Cape Charles, or Delaware Breakwater Quarantines, or any officer of said Service on duty at any port on the interior rivers, the Great Lakes or Pacific coast, and all quarantine officers acting under proper State or local authority.

Special regulations to aid local quarantine authorities will be promulgated hereafter should occasion require.

Dr. Jerome Cochran, of the State Board of Health of Alabama, in a recent report has stated that the late epidemic of yellow fever in Florida was not introduced into the State by the usual trade channels, but by smugglers. This confirms unofficial statements received at this Bureau some weeks since. Dr. Cochran states that the last case was discharged May 11, and the last death occurred May 8, and that there have been active precautions taken to prevent the reappearance of the disease.

JOHN B. HAMILTON,
Supervising Surgeon-General Mar. Hosp. Service.

BOOK REVIEWS.

DISEASES OF MAN: Data of their Nomenclature, Classification and Genesis. By JOHN W. S. GOULEY, M.D., Surgeon to Bellevue Hospital. 8vo, pp. 412. New York: J. H. Vail & Co. 1888. Chicago: W. T. Keener.

The objects of this book, as explained in the preface, are: *first*, to urge the official adoption of a suitable basis for the nomenclature and classification of the diseases of man; *second*, to place before the medical profession certain propositions directed to an improved classification of diseases; and, *third*, to awaken the attention of teachers to the necessity of ameliorating the nomenclature of medicine, pointing out some of the many misused and improperly formed words that are now current, and proposing new terms for their consideration.

In the opinion of the author a nomenclature and classification to be useful and staple should not only rest upon a proper foundation, but should be duly authorized by the whole profession of medicine; and he submits certain questions for discussion in and settlement by the International Medical Congress.

The work is divided into five sections. The first

section comprises: some anatomical considerations of the human body; a statement of the objects and scope of medicine; a classification of medicine; the mutual relations of medicine and surgery; an arrangement of medicine into departments in accordance with the apparatuses of the human body; the definition and genesis of disease; a synopsis of the morbid states and morbid processes of the body, designed as a suggestion of a groundwork for the classification of diseases; and an analysis of some of the anatomical terms used in classification. The *second* section relates to the history, development, scope and significance of human nosography, and contains synopses of a considerable number of systematic arrangements of diseases, illustrative of the principles of nomenclature and classification, and also rules for the guidance of nosographers by Cullen, Parr, Young, and Linnæus.

The *third* section consists of a nosographical bibliography, chronologically arranged from the time of Felix Platerus.

The *fourth* section is devoted to the elucidation of what is conceived to be a proper basis, character, and method of the nomenclature and classification of the diseases of man; and to the definitions of the terms of classification.

The *fifth* and last section is intended as further explanations of the morbid states and morbid processes, and as an analysis of some of the terms used in general pathology, besides which it embodies a summary of the present state of knowledge of the bacteria, ptomaines, leucomaines, and "extractives," and indicates the relations borne to medicine and surgery by these microörganisms and toxic alkaloids of putridity, and, finally, remarks on the neoplasms and on their classification.

Such is the scope of this work; a work that is a monument of patient, painstaking labor, and for which we fear the author will not be rewarded by an early recognition on the part of the profession, unless some effort be made to simplify matters at the Tenth International Medical Congress.

MISCELLANEOUS.

THE AMERICAN ASSOCIATION FOR THE CURE OF INEBRIATES held its semi-annual session in Brooklyn recently. Several papers were presented. One, by Dr. T. L. Wright, of Bellefontaine, Ohio, on "Points Touching the Medical Jurisprudence of Alcoholic Inebriety," referred in large detail to the physical, mental and moral disabilities caused by alcoholic indulgence, and asserted that these were only the advance guard of pernicious results.

Dr. C. C. Fite, of Knoxville, Tenn., offered a paper on "The Prohibition Question from a Medico-Legal Standpoint," in which he predicted that long before prohibition becomes general, the vital issue—the prevention and cure of drunkenness—will be reached by society regarding habitual indulgence in alcohol as a disease and, denying the right of any individual to further a tendency, hereditary or acquired, toward the inevitable physical and mental damage which excess in drinking involves, insisting that he shall be protected—and with him those who, otherwise, might inherit the baneful effects of his excess—by treating and caring for him as are the insane, or the victims of other disease. The paper was a logical, forceful plea for the need of to-day—proper asylums where the alcoholic inebriate can have that rational, scientific treatment his case demands. Dr. J. B. Mattison, of Brooklyn, read two papers, "The Ethics of Opium Habitués," and "Antifebrin, vice Opium, as an Anodyne." In the former he asserted that several years' exclusive professional experience among a large and enlarging number of opium habitués convinced him that the popular idea that all men who use opium are liars, is a mistaken one. He argued that the prevalent opinion—uncharitable and untrue—of an opium habitué being merely the victim of a vicious indulgence—was a leading factor in his desire to shield himself from censure, and claimed that a more rational and right appreciation of the situation—regarding such patients, with certain exceptions, as creatures of conditions beyond control—would be most helpful against the protective temptation to untruth. Besides, a more liberal and correct opinion on this score would have an important bearing on their medico-legal status and treatment. In his second paper, Dr. Mattison referred to the recent triumphs of analytical chemistry in giving the profession such valuable hypnotics as amylen hydrate and sulphonal, and, noting the far reaching value of any drug that will take the place of opium—which, while so great a blessing is so often a bane—expressed his belief that the new anodyne, antifebrin, was the richest addition of modern times to the therapeutics of pain.

PORTRAITS OF DR. C. R. AGNEW.—At the last meeting of the Ophthalmological and Otological Section of the New York Academy of Medicine, the following motion was made and carried:

"That a committee be appointed, of which the chairman of the Section, Dr. David Webster, be a member, whose duty it shall be to obtain a good photograph of the late Dr. Cornelius R. Agnew, for the purpose of having engravings suitable for framing made from this. The right of issue and sale of such engravings shall be given to some first-class publisher, if practicable; if not, the committee shall offer them to the profession at cost."

In accordance with the above, a committee has been appointed. Members of the profession who desire such an engraving, accompanied by an autograph signature, should send their names and addresses to the Secretary of the committee, Dr. Charles H. May, 640 Madison Ave., New York City, at once. When all such names shall have been recorded, those who have requested a copy of the engraving will be notified of the cost of the same, either by the publisher or by the committee having the matter in charge.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM JUNE 9, 1888, TO JUNE 15, 1888.

Capt. Henry P. Birmingham, Asst. Surgeon, granted leave of absence for one month. S. O. 117, Div. Atlantic, June 11, 1888.

Capt. A. V. Cherbonnier, Medical Storekeeper, granted leave of absence for four months, on surgeon's certificate of disability. S. O. 133, A. G. O,, June 9, 1888.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY, DURING THE WEEK ENDING JUNE 16, 1888.

Surgeon Daniel McMurtrie, detached from Naval Hospital, Yokohama, Japan, and return home.

Surgeon C. U. Gravatt, detached from U. S. S. "Michigan" and to hospital, Yokohama.

P. A. Surgeon John M. Edgar, ordered to the U. S. S. "Michigan."

Surgeon B. S. Mackie, ordered to the U. S. S. "Ossipee."

Surgeon J. B. Parker, detached from U. S. S. "Ossipee" and wait orders.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE HOSPITAL SERVICE FOR THE WEEK ENDING JUNE 16, 1888.

Surgeon Walter Wyman, detailed as member Board of Examiners, vice Surgeon Fessenden, excused on account of physical disability. June 15, 1888.

Surgeon C. S. D. Fessenden, granted leave of absence for thirty days on account of sickness. June 15, 1888.